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THE TRUTH AND THE TRUTH ONLY ON EVERY PAGE FROM COVER TO COVER

ORIGINAL ARTICLES

Vaccine Therapy in Typhoid Fever. By J. B. Elliott, Jr., New Orleans 1
The Stokes-Adams Syndrome. By J. O. Gaither, Oxford, Miss. 7
Sanitation in Southern Cities. By Chas. A. Mohr, Mobile, Ala. 11
Dispensary Work in Mississippi. By W. S. Leathers, University, Miss. 16
The Training of the Specialist. By H. M. Cullom, Nashville, Tenn. 20
Congenital Morphinism, Cases. By George E. Petter, Memphis, Tenn. 25
Foreign Bodies in Bronchus, Bronchoscopy. By C. A. Thigpen, Montgomery, Ala. 22
Tonic Compression of Lung in Pulmonary Tuberculosis. By Mary E. Lapham, Highlands, N. C. 31
End Result Operation Graves' Disease. By George W. Crile, Cleveland, O. 38
Surgery of Intestines. Report 17 Cases with Recovery. By E. M. Prince, Birmingham, Ala. 43
Plea for Use of Nitrous Oxide. By George S. Foster, Manchester, N. H. 46
Congenital Gangrene, Amputation. By R. Winslow, Baltimore, Md. 49
Important Factors Prophylaxis of Malarial Fevers. By Charles F. Craig, Washington, D. C. 56

EDITORIALS

Gullible Doctors and Medical Directories 58
Fee Splitting 59
Dr. Rupert Blue 61
Open Treatment of Fractures 61
Do You Seek Truth? 62
Pellagra in Italy 63
Anesthesiology 64
Therapeutics 65

BOOK REVIEWS.

THE MODERN DIAGNOSIS

Anders & Boston's Medical Diagnosis

Sahli's Diagnostic Methods

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SEE PAGE 9

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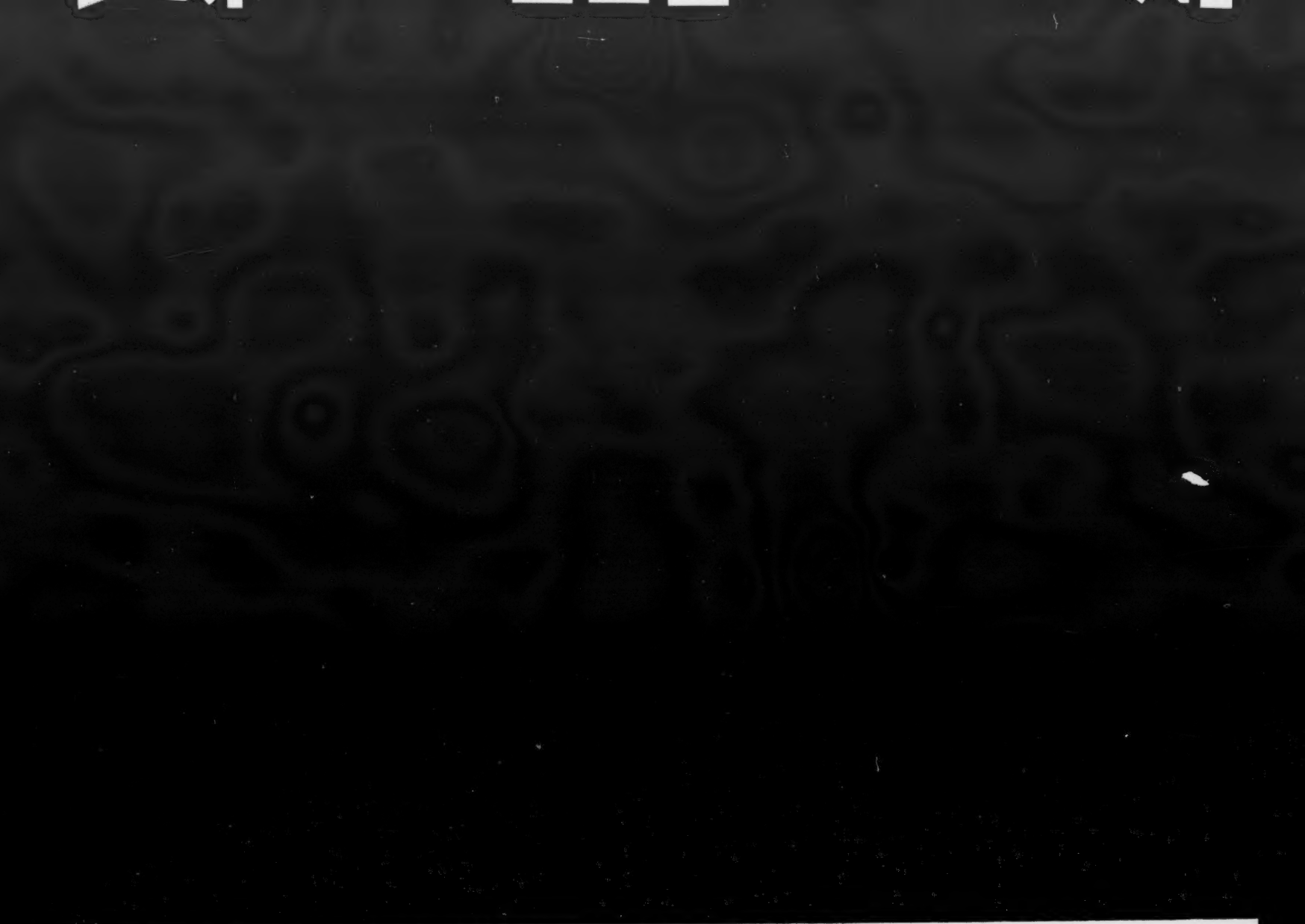

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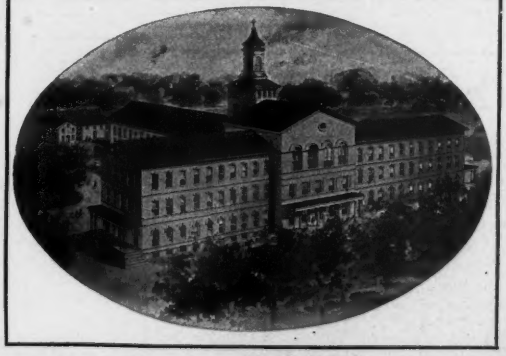

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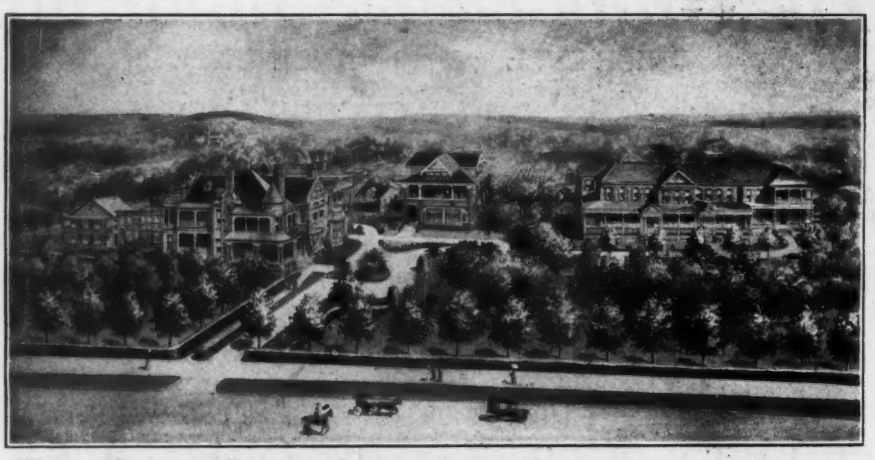

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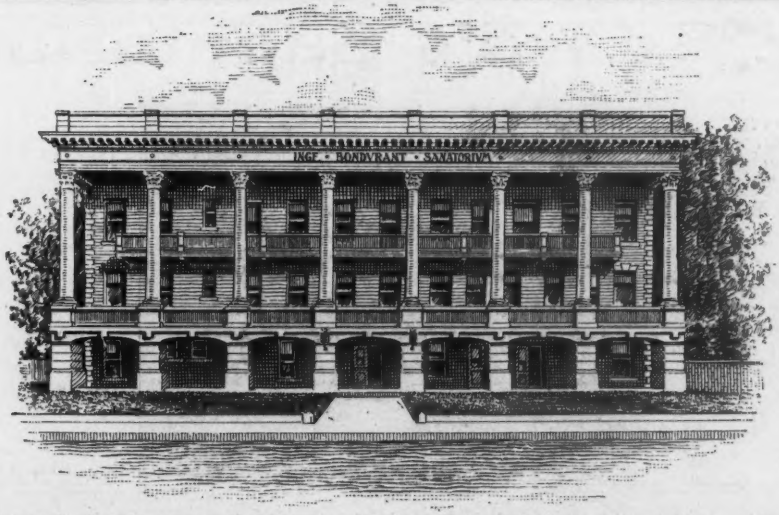

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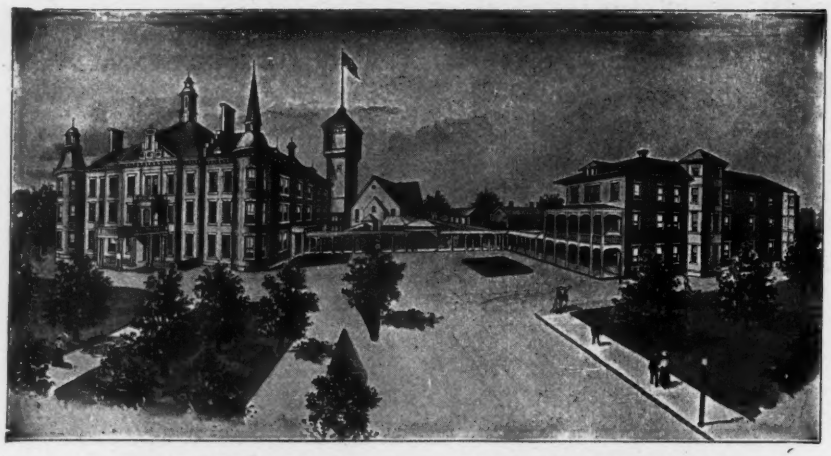

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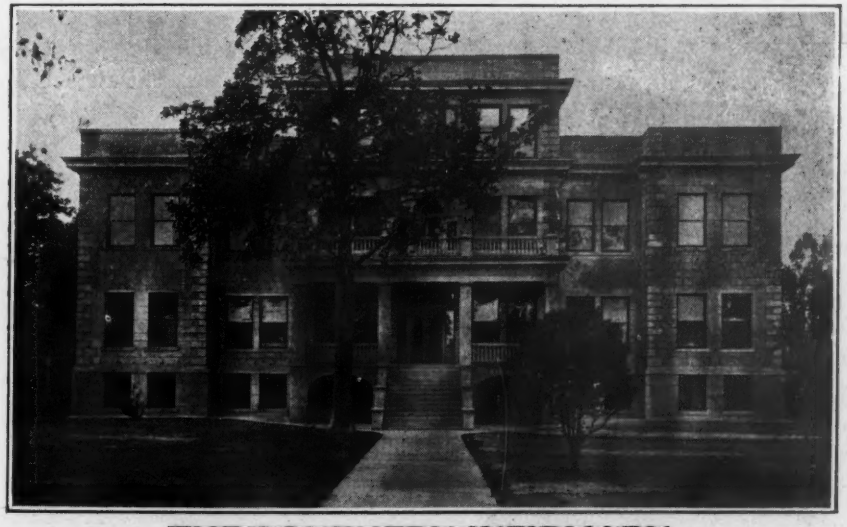

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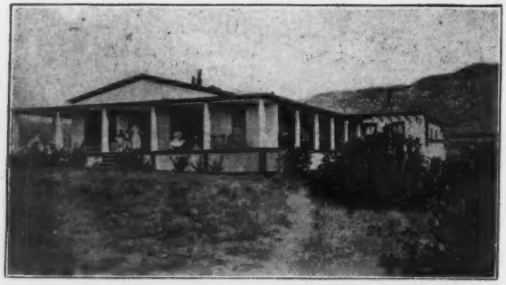

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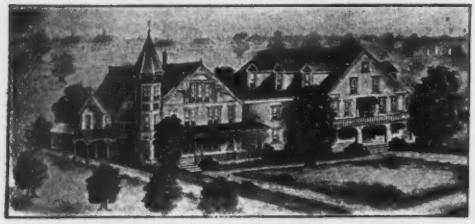

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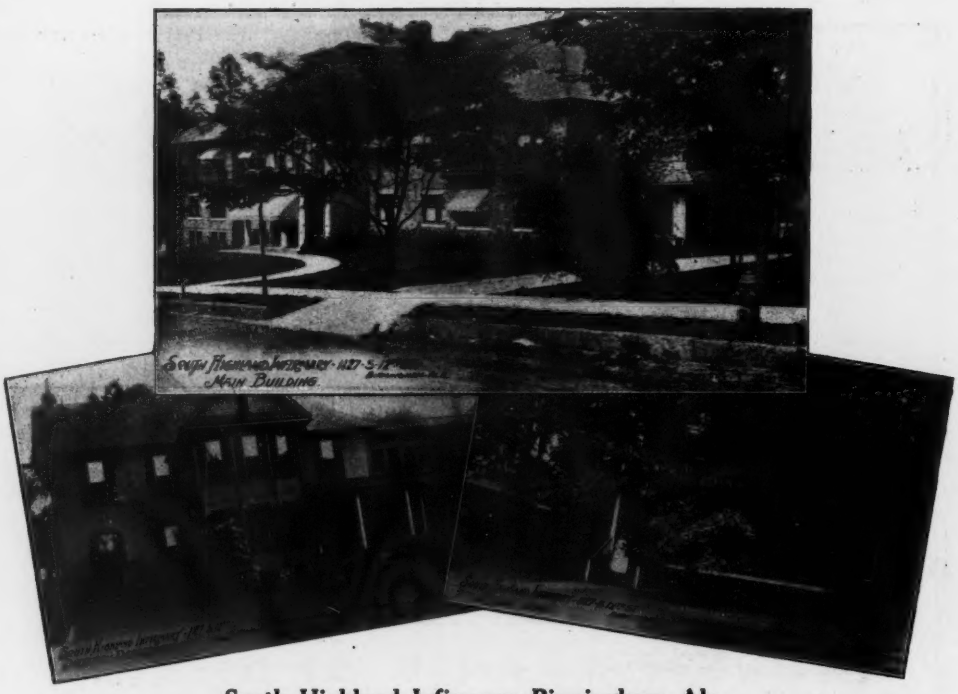

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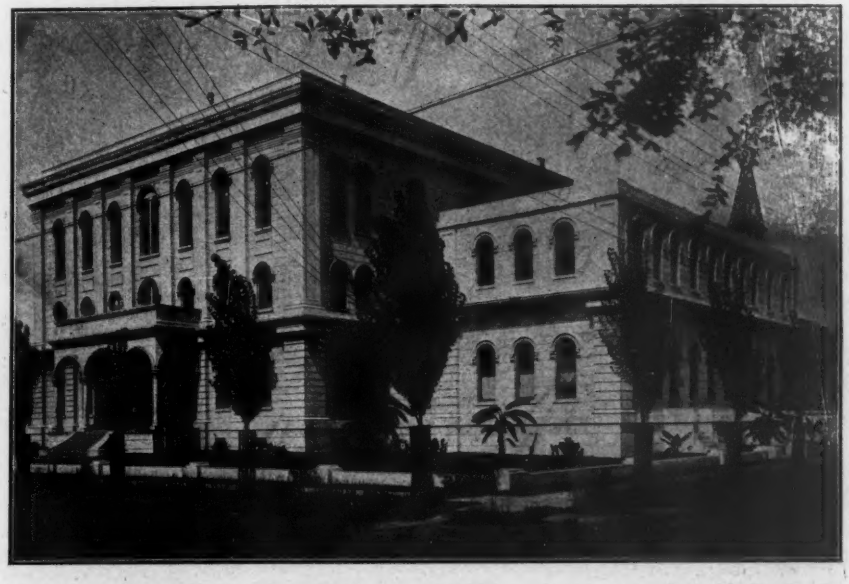

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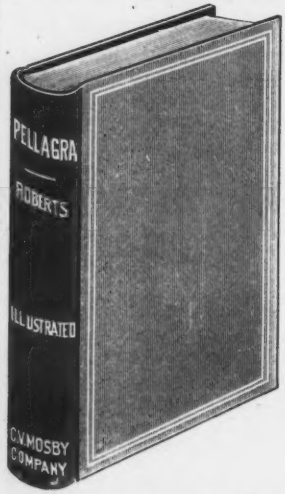

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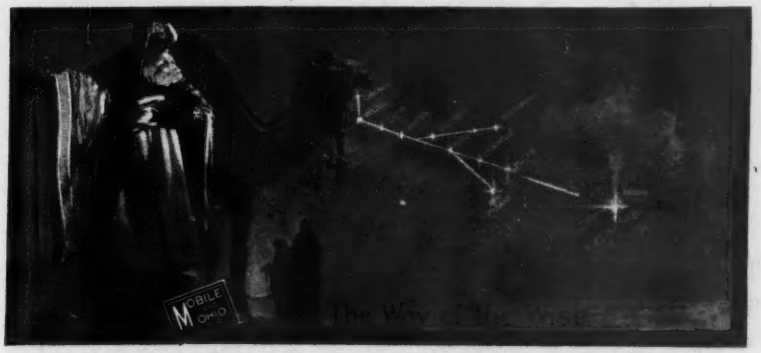

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SOUTHERN MEDICAL JOURNAL

PUBLISHED MONTHLY

Volume V. NASHVILLE, TENN., FEBRUARY, 1912 Number 1.

ORIGINAL ARTICLES

VACCINE THERAPHY IN TYPHOID FEVER*

By J. B. ELLIOTT, JR., M.D.,
New Orleans, La.

The treatment and prevention of typhoid fever is an ever present question in America. In England it has been practically solved by an efficient sanitary system operating under a centralized government. In America, with 40-odd central governments, with laws inefficient and non-enforced as regards public health, we see typhoid daily. The question is brought home to us constantly in seeing or hearing of families who have gone for the holidays to the mountains of our neighboring States, returning with, or having there, the dread disease, all due to laxity in the enforcement of the most rudimentary laws of sanitation. I have come to regard the famous well at the old family homestead as the most deadly peril. Fortunately for us, I hope and believe, a preventative has been discovered.

Pfeiffer, in 1896, was the first to conceive the idea of protecting against typhoid by the use of bacterial vaccines. At about the same time Wright, in England, at the suggestion of Haffkine, took up this work, and, soon gaining the ear of his government, began to immunize the troops in India against typhoid. In Germany also this work was begun, and now for the past two or three years in America, in the only services controlled by a central government where laws can be enforced, we see the army and navy being protected by vaccination.

Chantemesse, in Paris in 1904, or thereabouts, had begun to use a serum in the treatment of his typhoid patients, and up to 1908 had treated some one thousand cases with a mortality of 4.3 per cent, while in the other hospitals of Paris, during the same period, there were 5,621 cases with a mortality of 17 per cent. Richardson, in Boston, as early as 1899, commenced work along the same lines, and endeavored to produce an anti-typhoid serum, but after trying it on some thirty-five cases, declared that it was no more efficacious than filtrates or residue, and was much more expensive.

It would be well here to stop and emphasize the difference between serum and vaccine therapy. In the former we see an effort to produce a true anti-bactericidal serum, as is the case in both anti-gonococcal and anti-meningococcal serums, while in the latter the only object in view is to stimulate the organism to produce larger amounts of anti-bodies (specific amboceptors).

In endeavoring to estimate the value of prophylaxis in typhoid, by vaccination, we must ask the following questions:

First—Has typhoid vaccination produced any harmful results?

Second—Has typhoid vaccination proved of real value as a prophylactic.

Third—If so proven, how long does the immunity last?

Foster reports that there have been vaccinated in the United States army up to March, 1910, 31,000 cases, without a single harmful

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result. Richardson and Spooner, in Boston, have noticed no ill effects in any cases. Bass, in New Orleans, in a series of over 300 cases, has seen only one case in which the reaction was over 102 degrees F., and in this case there were no bad after effects.

Leishman and Wright, in England, make note of no evil results in all the thousands of cases in the British army.

In San Antonio, Tex., during the late mobilization of troops, there was no report of any harmful effects in several thousand prophylactic vaccinations. In view of these findings, I think we can safely say that the use of typhoid vaccines is devoid of any danger when used prophylactically.

In answer to the second question, *i.e.*, the prophylactic value, let us study the reports of the American and British armies and other sources.

In Jacksonville, Fla., during the Spanish-American war, in an army of 10,756 men, there were 1,729 positive cases of typhoid, with 248 deaths; while at San Antonio, in an army of 12,801 vaccinated troops there was but one case, and that imported, and no deaths. Leishman reports from the English army observations on a body of 12,083 troops, living under similar conditions, that amongst the 5,473 immunized there were 21 cases and 2 deaths, while amongst 6,610 not vaccinated there were 187 cases and 26 deaths. Richardson and Spooner, in Boston, report that since typhoid vaccination has been practiced amongst the nurses in the Boston City Hospital there has been no case of typhoid; this was for the years 1909-1910.

In a series of over 200 vaccinations amongst the senior class of Tulane University during the past two years we have had only one case, which case was proven to have had the infection previous to vaccination.

The most remarkable report is that made by Cullinan. An epidemic of typhoid broke out in an asylum of which he had charge. To prevent its spread he inoculated some 500 who consented, and of these only 1.3 per cent had it, while of the non-vaccinated 14.9 per cent went down with typhoid fever.

Foster, in the Journal of the American Medical Association for November 19, 1910, reports an even more conclusive proof of its value.

Dr. H. Vincent, in his report to the Paris Academy of Medicine, says: "The use of anti-typhoid vaccine should be recommended as a practical and rational means of diminishing the frequency and gravity of typhoid fever in France."

A committee, composed of Drs. Lumsden, Rucker and Freeman, reported to the American Medical Association at Los Angeles that typhoid vaccination "seems to confer a marked immunity to the disease."

That the States of Wisconsin, Maryland and Georgia now furnish typhoid vaccines free of charge to the medical practitioners shows a growing faith in its usefulness. As to how long the immunity lasts, the committee above mentioned, in its report at Los Angeles, says: "While the duration of this immunity has not yet been definitely determined, the results of experiments with the agglutination of the blood of inoculated persons would indicate that the immunity has a duration of less than one year." They further say: "It should be borne in mind, however, that the duration of the immunity may not coincide with the persistence of the agglutinating reaction in the blood."

The opinion amongst the medical officers of the army, both in this country and in England, place the immunity as lasting at least three years and possibly very much longer. Ricketts places the immunity at two years or more.

It would seem to me, in summarizing this review of the prophylactic use of vaccines in typhoid, that the evidence is overwhelmingly in favor of its continued trial. It is absolutely harmless, and may do away, in part at least, with one of our greatest scourges.

Midway between the treatment of typhoid fever and typhoid prophylaxis with vaccines comes the treatment of the typhoid carriers, and here again we see good results reported.

Stone reports a typhoid carrier cured in six weeks. Meader (J. H. Hospital Bull., Sept., 1910) says that a typhoid carrier may be actively immunized to the bacillus typhosus by the use of autogenous vaccines, and in so doing the bactericidal substances may be markedly increased. He shows that after the first injection the bactericidal substances were present in dilutions of 1 to 800 and 1 to 1,600, and after the third injection the bactericidal substances were still present in dilutions of 1 to 10,000 and 1 to 16,000. It would seem that these observations must help to prove the efficacy of the vaccine treatment.

Anders, while not in favor of the vaccines in the treatment of typhoid, agrees that it is efficacious in the prevention of relapses and in typhoid carriers.

When we come to the treatment of typhoid fever itself with these vaccines, we must remember that we are not dealing with an antitoxin, but with a vaccine, and that in the use of vaccine we presuppose that the patient has reserves capable of being aroused into action; and, as Richardson further says, the earlier it is used the more useful will it be. This is, of course, the same rule that is applied to all other curative antitoxins or vaccines. To wait until the system has been overwhelmed by any toxin and then hope to neutralize the toxins or stimulate the formation of new anti-bodies is manifestly absurd.

In a hasty review of those cases treated with vaccines, I find that Russell has collected 118 cases with a mortality of 4 per cent. Callison, up to July 1, 1911, had collected 323 cases, with a mortality of 5 per cent.

Almost every individual reporter has declared that the temperature, course and convalesence have been markedly benefited. Hollis (Med. Record, Oct. 8, 1910) says that the agglutinins are markedly stimulated by the vaccine, and the headache, gastro-intestinal symptoms and toxaemia were far less marked than in the unvaccinated. Hollis predicts a brilliant future for it.

Meakins and Foster (Montreal) report 41 cases; they used injections of one thousand, fifteen hundred, and two thousand million, and report that the second dose produced a crisis in 50 per cent of the cases; that the average length of the unvaccinated cases was 37 days, while the vaccinated were sick only 28 days; that only 5 per cent of the vaccinated had complications, while in the unvaccinated group 42 per cent had complications.

Personally, I have treated only three cases. One, vaccinated, not knowing that he had typhoid at the time, ran an uncomplicated course in 18 days, although he had been poisoned with the most virulent cultures while working in the laboratory. The second case, of which I show the chart, is one to which I wish to draw your attention more closely. I saw this patient first on the 9th day of June, about the fourth day of her fever. She had then no enlargement of the spleen and no rose spots, but had a terrific headache. A Widal made the next morning proved negative, and I at once asked Dr. Bass to make a blood culture, which he reported positive within the next twenty-four hours. On the next day we gave a dose of five hundred millions at 3 p. m., and you will notice the drop in the temperature, and along with it a general improvement in all symptoms. An interesting point in the case was the appearance of hundreds of malcules, resembling rose spots, on the trunk the day after the injection, though there had been only four or five rose spots the day previous.

The third case, seen with Dr. Joseph Martin, had been sick about ten days, though she had been in bed only five days when first seen. Her temperature was rising daily, and all symptoms pointed to a severe and long case. On the seventh day we gave five hundred million, and the chart will show the result, while the second dose caused almost what

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might be called a crisis, with rapid convalescence.

Dr. J. E. Landry, of New Orleans, reports five cases treated with vaccines, and says that in every case, when used early, it was markedly beneficial. Drs. Bass, Lemann and Eshleman report no benefit, as far as they could see, in a few cases, though in each case it had been given late in the disease.

While I fully realize the danger of drawing conclusions from such a very small number of cases, and while I am most conservative, as a rule, in matters therapeutic, yet I must acknowledge that I have become just a little enthused over this method of treatment, and shall continue to administer the vaccines to all cases of typhoid fever, if seen within the first eight or ten days, and, if we make blood cultures early and often, few cases will escape diagnosis in their incipiency.

DISCUSSION.

Dr. Allen W. Freeman, Richmond, Va.—If I may be allowed the privilege of the floor, there are one or two things to which I would like to call attention. First, in regard to the danger of typhoid vaccination. I hardly think it is fair at the present time to say that typhoid vaccination is entirely without danger. In a recent issue of the Naval Medical Bulletin there is report of the case of a young marine in vigorous health, who, while in camp in Cuba, was inoculated with the same vaccine that was used in the routine inoculations of the marines of that corps, and who within two or three days thereafter developed a most virulent case of true typhoid fever, and promptly died of it. At the autopsy living typhoid bacilli were found in the circulating blood and in the various tissues. The man who studied the case and did the bacteriological work, as well as the clinicians, agreed that this young man was most probably in the incubative stage of typhoid fever, and that the dose of typhoid vaccine was sufficient to overwhelm him and to bring on a fatal result. At the time of inoculation he had no demonstrable symptoms of typhoid fever. It is not fair, therefore, to say that the method is entirely without danger.

There is no doubt whatever that typhoid vaccination does confer relative immunity against the disease. The degree of that immunity has been variously estimated by various experimenters and observers.

In the early cases in the British army in South Africa immunity was about one-half, that is, the vaccinated men had only about half as many cases of typhoid fever, and about one-tenth as many deaths as the unvaccinated. Later, with improvement in the technic, these figures have been changed very materially. But even in the vaccinated troops there was from one-seventh to one-tenth the number of cases of the disease that occurred among the unvaccinated.

It seems to me that the true lesson taught by the San Antonio Camp has been lost. Every one will agree, I think, that the insanitary conditions which prevailed at Chickamauga Park or at Jacksonville, did not prevail at San Antonio. If they had, there would have been developed two or three hundred cases of typhoid fever among the troops, whether vaccinated or not. The real triumph of San Antonio was a triumph of sanitation. It brought home to the American people that they must quit scattering human filth. That was the lesson of the San Antonio troops, and it has been completely obscured by the question of vaccination. Typhoid vaccination is a useful and safe thing in troops, schools and in certain civic populations, but the time will not soon come, from our experience in vaccinating large bodies of people against smallpox, when vaccination can be relied on to protect any large percentage of the population. When we think of vaccination for smallpox and know that it confers almost absolute immunity for two or three years and a relative immunity for practically a whole life, and that it involves only one operation; when we consider further that we have anti-vaccination societies until it seems impossible to vaccinate school children, what chance have we of administering a vaccine for typhoid fever, which is still somewhat experimental, requires three operations, and results frequently in considerable reaction, and whose benefit is only relative? The lesson we must impress upon our people is not to get vaccinated, but to improve sanitary conditions. The reason for this conservative statement which has been made by the typhoid committee is well founded, and we earnestly and honestly believe that the lesson we want to impress is not the one of vaccination, but of improved sanitation.

As to the treatment of typhoid fever by vaccines, it is a question which ought to be gone into very conservatively. As Richardson and men who have studied the subject are agreed, there is a time when the vaccine may be of great help to the patient and a time when it will turn the scale and seal the patient's doom. It is a question which only a skilled clinician can settle at the present time. It takes a very skillful physician to look at a patient and say, This fellow is not reacting; he needs stimulating; his anti-bodies are not coming out as they should, and to look at another patient and say, This fellow is overwhelmed. The clinician should go slowly in recommending vaccines for curative purposes. I have seen two patients in Virginia who would have had a fair chance of living if they had not received vaccines, but who promptly died on receiving them. One man came into our laboratory and said, "I want more vaccine." I gave it to two patients, but both died before I gave it a fair test." That is going to be the experience of men who give the vaccine without knowing what they are doing.

In the matter of prophylaxis we do not want to lose sight of the real lesson of sanitation, and in considering treatment we should be conservative in recommending the vaccine.

Dr. Hiram Byrd, Jacksonville, Fla.—About a year

and a half ago we began the administration of typhoid vaccine. We vaccinated 125 people, making some 375 injections. In two instances the reaction was quite severe. In two instances, both of the patients being women, the reaction lasted for three days. Aside from that, the reactions have not been serious. The youngest child vaccinated was sixteen months old, and the reaction in that instance, as in all other children we have had, several of which were under five years of age, was very slight.

I have been impressed with this subject from two standpoints. One is the growing enthusiasm for the administration of typhoid vaccine, and, at the same time, the fact that there is a growing unrest among bacteriologists as to whether the typhoid bacillus is the true cause of typhoid fever. That unrest is based largely upon analogy. The analogy is found in cases of hog cholera. The hog cholera bacillus was at one time thought to be the specific cause of hog cholera. A vaccine was made just the same as we make a typhoid vaccine, and it produced a reaction which we thought was hog cholera, but it was found that if hogs were vaccinated with the hog cholera bacillus they would still develop hog cholera, whereas hogs that had contracted hog cholera by the natural sources would not do so. Moreover, it was found that the mortality attending such cases—I mean those hogs that had been vaccinated and then contracted hog cholera—was lower than the mortality where hog cholera was contracted without the use of the vaccine.

Another advance was made when it was found that the blood of a hog suffering from hog cholera when injected into another animal would produce the disease, and a still further advance was made when it was found that the blood could be filtered, so that there was no possibility of getting hog cholera bacillus, and it would still produce it, so that the hog cholera bacillus has been abandoned as the cause of hog cholera. The true cause of hog cholera is a filterable virus. So far as we can follow the analogy it runs parallel with typhoid fever. The typhoid bacillus and para-typhoid, all of which will produce a more or less parallel train of symptoms, have been classed together with the so-called hog cholera bacillus as members of the typho-colon group.

We are not to forget also that we have a group of cases of fever in which we are unable to detect any specific evidence of malaria, and yet in which we will never get a Widal reaction. Bacteriologists have in some instances taken the position that typhoid fever may be due, like hog cholera, to a filterable virus, and that the typhoid bacillus is, like the bacillus of hog cholera, a complicating organism; that in such cases you will never be able to make a diagnosis of typhoid fever because you will not get a Widal reaction, the complicating organism not being present.

I raise this question with no attempt to settle it or to express any views on it, and I apologize to the association for raising it at all. But it may be that our attempts to vaccinate against typhoid fever are merely attempts to vaccinate against the *complication* of typhoid fever. Apparently the result justifies the procedure.

Dr. Louis LeRoy, Memphis, Tenn.—I want to endorse strongly what the last speaker has said. I believe that we are at present suffering very largely from a pernicious activity of certain biologic product manufacturers in the line of pushing indiscriminately and recommending indiscriminately biologic products of this nature, more so in the nature of tuberculin possibly than in the typhoid vaccine. I do not want to inject a new issue, but they run parallel.

I have seen in the last three years a very painful number of tuberculous patients who were killed absolutely by the indiscriminate and wild administration of tuberculin. I am aware of the fact that it is claimed that negative phases are not as frequent in typhoid as in some other forms of vaccine administration. Still with all this, it is a call upon the reserve, and as the doctor said, without very skillful clinical observation, we are apt to call out all of our reserves, squander them in an almost hopeless charge, and leave the patient helpless in the face of his increasing infection.

Dr. Elliott was careful to say that he limits the use of the vaccine to the first ten days. Even at that, it would require some discrimination, which of course I am perfectly willing to concede he has, in the administration of this vaccine to all cases. We have all seen typhoid patients who were almost overwhelmed from the beginning. I would question the administration of large doses of vaccine to a patient of that kind. Again, late in the disease it does not seem to be of much use. The main thing I wish to protest against is the indiscriminate, and I may say almost untruthful, advertising of these vaccines by therapeutic houses and retail men who do not know the first principles in regard to its use, and yet who are urging its use indiscriminately in all patients with typhoid fever, and they say that if we do not get results with one injection, we should give these patients some more injections without any balancing of judgment to guard against the improper use of the vaccine. I have seen several cases in which preventative inoculations were resorted to, in which, while not permanent, injury has been done. In one case there was indisposition for six weeks, with an irregular temperature, with a loss of eight or ten pounds in weight, and a material breaking down in health, all of these things following the use of typhoid vaccination. That particular patient is on the way to recovery now, and is doing very well. Two more patients showed a loss of four or five pounds in weight and general indisposition for about three weeks. It may be that in cases of that kind we will in the long run by using the vaccine indiscriminately do some harm, especially in patients who may have incipient tuberculosis or some condition in which they cannot afford to suffer that degree of depression. I would like some of our men who have a better and larger opportunity of observing these cases to follow them a little further to see whether or not in their judgment some of these other conditions do not follow the administration of the vaccine. At present it is almost impossible to get reliable statistics on this subject. We know that these troubles follow an attack of some other infectious disease. I have in mind tuberculosis which we know oftentimes lights up afresh where previously it was unsuspected following an attack of typhoid fever, and possibly following too severe reactions from these vaccinations.

I would like to ask Dr. Elliott how long a pe-

riod of incubation elapsed between the taking of the typhoid culture and the development of the symptoms? I knew of one case in which symptoms of typhoid fever developed inside of three days following a large dose.

Dr. Elliott—Nine or ten days.

Dr. R. H. Von Ezdorf, Mobile, Ala.—I have had very little experience in the use of anti-typhoid vaccine. In one case in which I used the vaccine there was considerable reaction, in that the temperature went up to 104° F. and lasted for two days. Following the second injection there was the same reaction, but it did not last quite as long. From the statistics I think we can expect these marked reactions in about ten per cent of the cases. In the few cases in which I injected the vaccine, I found that in children the reaction hardly amounted to anything; that on the third injection it would only last about half an hour or so, that is, they were conscious of the effect of the injection, and thereafter seemed to have very little reaction. In my own case there was a reaction following the first injection that lasted thirty-six hours; in the second injection the reaction lasted twenty-four, and after the third injection the reaction lasted probably eighteen hours. Three days after the third injection the Widal reaction was made at one to one hundred, which proved to be an instantaneous reaction. A year or two before that I found my reaction to the Widal test was negative.

With regard to sanitation, none of us would decry sanitation as a proper means for combating any of the infectious diseases. We are always ready to advance the claims of sanitation above everything else in our cities and towns in combating infectious diseases; but here we have a means which Dr. Elliott has shown to be from statistics very efficient by which we can combat typhoid fever. However, we should do that advisedly, as has been pointed out by Dr. McElroy.

The United States Public Health and Marine Hospital Service has issued a circular to the effect that officers may administer the vaccine to sailors who may desire it, so that it has been recognized not only by the army and navy of the United States, but also by the Public Health and Marine Hospital Service, who are using it advisedly and only under circumstances where the individuals desire it. It is going to be an effectual method of combating typhoid fever, and I do not hesitate to advocate it so far as seems practical. I always make a physical examination of the individual before administering it, and I feel that should be done in all cases.

With regard to the sailors, we can see what good might be accomplished from the use of typhoid vaccine. Sailors frequently go from one port to another, and we will be able in many cases to prevent their developing typhoid fever by giving them prophylactic inoculation.

While acting as quarantine officer at New Orleans at the Quarantine Station during 1907 to 1910, I had occasion to see a number of typhoid cases amongst the sailors who had embarked at Mobile and came around to New Orleans. These cases were removed at the Quarantine Station. It can be seen from what I have said, that if we use this typhoid vaccine in that line of work among sailors, we should be able to accomplish something to protect other states. It will also have a public health bearing, and so long as the sanitary conditions are not ideal in some of our states, typhoid vaccination is an aid and we should avail ourselves of it.

Dr. William Krauss, Memphis.—We must take it for granted that the German government would not countenance any system of experimentation with its troops which would prove detrimental to the personnel of the army, and taking that into consideration I think we can reasonably assume that the German government would not permit the vaccination of its most priceless possession, the soldiers, if it were so dangerous as some of the gentlemen would have us believe.

Dr. Graham E. Henson, Crescent City, Fla.—I have not been as enthusiastic over the use of anti-typhoid vaccine as have a great many practitioners. I have personal knowledge of the case of a member of the Marine Hospital Corps, stationed at Fort Day, Florida, who was on the Mexican border with the troops and who had typhoid vaccine administered to him. He developed a temperature of 103, which varied from 103 to 105, and he was in the hospital a sick man for a week.

You have read doubtless Lieutenant Colonel Kean's report on the results obtained in the Manila camps, but he failed to report this instance where a man was in the hospital and very sick for a week. I know from personal knowledge and from conversation with the man that the illness from which he suffered was not only considered by him as being due to the use of typhoid vaccine, but it was admitted by the hospital authorities to be due to nothing else. I do not know what other cases may have occurred as the result of the administration of the typhoid vaccine, but this one case occurred, and for some reason was not included in Lieutenant-Colonel Kean's report.

There is no denying the fact that as a prophylactic agent it is a very valuable one, but it does seem to me that there are certain gentlemen who are enthusiastic and who seem to head off bad results that should be published. The results obtained have been apparently very good, but I see no reason why, if there are a few cases with bad symptoms, they should not also be reported.

Dr. J. B. McElroy, Memphis, Tenn.—Dr. Elliott, in his paper, gave us a very excellent review of the literature of this subject. He has shown that great benefit has been derived from the use of typhoid vaccines prophylactically, but I think he should hedge in these good results by a warning; in other words, if we could put a large question mark against the proposition whether or not these typhoid vaccines should be used promiscuously for the prevention of typhoid fever, it would do some good. I say this because in my community in Memphis, on the part of the Board of Health, there seems to be an insane idea on the subject of typhoid vaccination. Theoretically we would expect that while these individuals are acquiring immunity from the one or two doses which we administer, that there is a negative phase or sensitization of the individual during which he is more liable to contract typhoid fever than at other times. The cases cited by Dr. Freeman prove that this theory is correct. Where you have an army of men or a corps of nurses, or in the presence of a widespread epidemic of the dis-

ease, where you have the individuals under your care, it is well to use typhoid vaccines for the prevention of typhoid fever; but I do believe that we should stop and ask ourselves the question very seriously, whether it is advisable to use these vaccines promiscuously because one or two cases of typhoid fever have broken out in a community.

Dr. Charles Le Baron, Gulfport, Miss.—It is not my desire to minimize sanitary and hygienic surroundings, but I desire to say that in 1909 in Chickamauga Park, in the joint maneuvers with the troops of Tennessee and Georgia, the regular troops of the United States Army, we had quite as perfect sanitation as there was at the camp on the Mexican border at San Antonio, and I speak advisedly because I was in both places. At that time we had typhoid fever at Chickamauga Park. We were then beginning the use of typhoid vaccination, and we had refused to a certain extent to explain the number of cases of the disease by the use of anti-typhoid vaccine and by improved methods of sanitation.

Shortly after my return from Chickamauga Park I happened to run into quite a severe epidemic of typhoid fever below here, and Dr. Elliott was called in consultation. There were twenty people who had been exposed to the disease. Every one of them was given typhoid vaccination, and not one contracted the disease. There were sixty-four vaccinations made in that epidemic in people who had been exposed to the disease, and not one of them had a symptom of typhoid fever. Not one of them had either positive or temporary trouble from coming in contact with any patient who had the disease.

We made application to Washington, and we were able to obtain sufficient vaccine to administer to the Mississippi National Guard. Not a member of the National Guard had typhoid fever, and that was thirteen months ago. It has been seven months since the last administration was given.

I desire to emphasize the necessity of the preventive use of typhoid vaccination.

Dr. Elliott (closing the discussion).—As a rule, I am very conservative in advocating new remedies. I went to San Antonio, I saw the camps, they were in a splendid sanitary condition; everything was clean, but notwithstanding all that, it does not detract from the value of vaccination. There must have been typhoid carriers among the troops. I acknowledge that it is not fair to compare Jacksonville with San Antonio, it is not a fair comparison at all, because in San Antonio everything was disposed of so beautifully.

As regards the stock vaccines, I have never used them. I have only used the vaccine that is made in our laboratory. I have always made it a practice to examine a patient before giving him or her the vaccine. Again, the medical students were always examined to see whether they had bad kidneys or bad hearts. They were all volunteer vaccinations, both nurses and medical students.

I have seen reactions from these vaccinations and have had them personally. In New Orleans we have very little or no typhoid on account of the water supply being so good; but we see people in the surrounding country who have no way of protecting themselves against contracting this disease, and I do not see any harm in using typhoid vaccine in properly selected cases. We should carefully examine every patient before the vaccine is injected.

As to the reports of the English Army and of the German Army, we must listen to them because they have been prepared by competent men. Thousands of troops have been vaccinated, and inasmuch as very few, if any, cases of typhoid fever have developed, there is something in typhoid vaccination.

With reference to typhoid carriers, that is very important, and if we could immunize a typhoid carrier it would be an enormous good to the community.

With reference to the treatment of typhoid by vaccination, I wish to say that we must not give it to a man who has been sick two or three weeks. I have seen several such cases in the last two weeks in which the vaccine has been given, and I do not advise giving vaccine in these cases, as it will not do a particle of good. At the beginning of the attack is the time to use typhoid vaccination.

It is very essential that you should select your cases carefully for the purpose of vaccination. Let us suppose that there is a family, one of whose members has typhoid fever, other members of that family may contract the disease by contact, and I do not see any harm in protecting the other members of the family against typhoid by resorting to the use of the vaccine. It may do some harm in a case now and then, but suppose you do have trouble once in a while, it would be trivial as compared with the great good vaccination would do. Of course, we see bad arms from vaccination occasionally. A patient might have tetanus from vaccination. That is true, but see how many lives you are likely to save by vaccination. Let us look at typhoid vaccination in a conservative manner and not drop it entirely.

THE STOKES-ADAMS SYNDROME.*

By DR. J. G. GAITHER,
Oxford, Miss.

It is with a distinct sense of my own inability to discuss accurately and comprehensively the subject of Stokes-Adams disease that I present this paper. I have been led to do so rather through a desire to report a thoroughly typical case, and thereby elicit

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from the many distinguished clinicians here present the ample discussion which their riper experience will supply.

I shall take the liberty of detailing my case before entering into the usual consideration of the disease.

On the 3d of October, 1911, I was requested to call in consultation with Dr. A. G. Hunt, of Tula, Miss., to see the patient, W. A. Lee, at a farm house about twelve miles distant from Oxford. The patient, on the evening before, while at his occupation of gin repairing, had been suddenly seized with a syncopal attack, during which he was unconscious for six or eight minutes, and his respirations slowed to about five per minute. By artificial respiration he soon resumed a fair condition. During the night before my visit he had four or five such attacks.

The patient when I first saw him was resting quietly in bed, but was complaining of a badly distended stomach, and was belching a quantity of gas. He was 50 years of age, small in stature and showed much exposure to weather. His blood pressure was 185. Upon examining the radial pulse I discovered that it was only 35 per minute.

Physical examination of the chest gave the following information:

Apex beat of the heart displaced outward and downward about one inch, area of deep cardiac dullness increased particularly over the left ventricle. Palpation gave no thrill, but did convey to the hand the sensation that each systole was one of severe muscular effort on the part of the heart. Auscultating over the apex, a murmur with systole was distinctly audible, the second sound being snappy and metallic in character. Changing to the right second interspace, the systolic murmur heard before became markedly intensified, showing the lesion to be an undoubted stenosis of the aortic semilunar valves. While listening for several minutes at this murmur, my attention was attracted to an unusual sound occurring during the long pause of the heart. Shifting the stethoscope to the right of the sternum over the right auricle, I became aware of an abortive heartbeat, one interposed regularly between each regular systole, the feeble abortive effort failing to cause a pulsation in the radials. There was visible pulsation in the anterior jugular vein crossing the neck anterior to the thyroid gland.

Shortly after making the physical examination I was hastily summoned to the bedside, the patient saying he knew one of the spells was imminent. And so it proved to be. He began to breathe rapidly, his eyes began to roll about, the pupils dilated widely, and there were a few convulsive movements of the hands. He then passed at once into a condition of unconsciousness, the rapid breathing gave way to slow, shallow resiprations, six or eight to the minute. His entire body became a deep blue.

I lowered the head, had his respiration supplemented by artificial movements, and gave him subcutaneously nitroglycerin and strychnine. Stronger water of ammonia was used as an inhalation. After a period of six or eight minutes the patient slowly began to regain his normal color, to be followed by a brief period of redness. Consciousness was restored and he talked at random for a few minutes, then dropped into such a slumber as follows the usual epileptic seizure.

He had several such seizures during the next five hours. He was finally given a small dose of morphine, and had no more attacks during that time. A few weeks later he dropped dead in Jackson.

This was a true case of Stokes-Adams syndrome with all the classic symptoms.

Now to a consideration in brief of thi condition. Stokes-Adams disease is a paroxysmal intensification of an already existing bradycardia, accompanied with one or more of the following phenomena: (a) Vertigo or syncope, (b) pseudo-epilepsy, (c) cyanosis and loss of consciousness, (d) visible pulsation of the veins of the neck. In the case which it was my good fortune to attend, the entire syndrome was present.

Etiology.—The cause of this condition has been the subject of much theory and investigation. Stokes, in 1830, and the earlier writers considered the cause as a degeneration of the heart. Later Charcot attributed it to disease of the medulla. Of more recent years coronary sclerosis has been held to play a large part in its causation. Theodore von Jurgensen, of the University of Tubingen, is an especially ardent advocate of this theory. But it remained for Erlanger, in his classic paper published in 1905, to demonstrate its undoubted relation to heart block, the latter condition being proved by him in a series of convincing experiments upon dogs, to be due to interference with the conductivity of the muscular fibres known as the muscular bundle of His.

The bundle of His is a band of muscle which connects the auricles and ventricles of the heart. The actual myocardium, in which resides the power of automatic contraction, is separate and distinct for the auricles and ventricles. In the adult, this auriculo-ventricular bundle of muscles, which connect the upper and lower poles of the heart, is about two-thirds of an inch long, one-twelfth of an inch broad and about the same thickness. Beginning in the septum between the two auricles, just below the remains of the foramen ovale, the bundle of His passes downward and forward, through the trigonum fibrosum of the auriculo-ventricular junction where it is closely related to the middle leaflet of the tricuspid valve, when it radiates downward to the ventricles.

Erlanger, in his experiments, showed that by compressing this narrow bundle of fibres, in the dog, the condition of heart block, either partial or complete, could be produced; that is, the rate of contraction between the auricle and ventricle could be made to assume different ratios even up to the point of beating absolutely independent of each other; that is, complete heart block. More than this, its complete destruction would cut off its relationship with the nervous supply to the heart, and allow the ventricles to continue the systole at the rate fixed for it by its own automatic muscular contractions, about 23 to 28 in man. Erlanger showed that during this condition of artificial heart block, as produced by compression on the bundle of His, he could under full doses of atropine, markedly increase the frequency of the auricular contractions, but no effect upon the ventricles.

Upon the evidence furnished by these experiments, Erlanger concluded the Stokes-Adams syndrome was due to inco-ordination between the auricles and ventricles, due to loss of conducting power of the bundle of His.

Tanhoffer, on the other hand, relates an incident which shows with what ease the syndrome was precipitated in one of his pupils in whom there was no disease of this bundle of fibres. One of his students, at the instance of Tanhoffer, was experimenting with his vagi. The student compressed with his left index finger and left thumb both right and left vagi. In a few seconds, while making a sphygmographic tracing of the boy's pulse, the professor had occasion to ask him a question. The pupil did not respond. Tanhoffer observed that his eyes had a glassy stare, that the left arm was rigidly contracted with the fingers and thumb pressing the throat, and the student was totally unconscious. He immediately pulled the hand from the vagi. His pulse had ceased at the wrist and continued so for 67 seconds, as shown by the sphygmogram from the right arm. The pulse soon returned and slowly rose in frequency. The student was unconscious for several minutes, and when he did regain his consciousness he was dizzy and nauseated. Here we have artificially produced the symptom complex of the Stokes-Adams disease in a healthy student by mechanical pressure upon the pneumogastric nerves.

In the list of reported cases there seem to be two distinct classes: (1) In patients passed middle life in whom arteriosclerosis has become pronounced in its effect upon brain, heart and kidney, and (2) a younger class of pa-

tients, under fifty, usually men, in whom a variety of causes are found. Babcock, of Chicago, became convinced that one of his cases, that of a young military officer, was largely due to the condition of his digestive system, and noted marked improvement upon a vegetarian diet. This patient was also suffering from an aortic stenosis, that was originally diagnosed at his admission to West Point. The case reported here by me, in addition to having a similar valvular condition, stated to me that he was always in better condition when he ate sparingly.

Competent pathologists have frequently made autopsies upon subjects of Stokes-Adams disease, and failed to find any pathologic lesion sufficient to justify the assumption of a causal relation.

The prognosis is serious and uncertain. The patient whose case I report had been suffering these attacks for two years, at long intervals between each attack. He died in the third year of the disease from its first visible manifestation. Many cases are reported as recovering, particularly where the cause, such as syphilis, can be property treated. But the condition is always grave, and each attack may result fatally.

The treatment is purely symptomatic. Diffusible stimulants are indicated, but in my case seemed to give little result. But when the patient would announce the approach of the seizure, as felt by him in a distinct aura, we could sometimes prevent it and postpone it by having him inhale at once the vapor of stronger water of ammonia. The subcutaneous administration of a fourth grain of morphine is indicated in frequent recurring attacks. The head should be put low to overcome the cerebral anemia, which is particularly pronounced in a case with the complication of an aortic stenosis.

I do not think much good accrued from the use of nitroglycerin. In fact, in severe arteriosclerosis, even the minute arterioles are so hardened as to resist its effect. Digitalis is contra-indicated from its effect upon the pneumogastric nerve. Nothnagel advises the combination of atropine and strychnine.

The treatment after the attack resolves itself into the general hygienic and the administration of iodide of potassium. Any particular line of diet which is found to lessen the frequency of attacks should be followed. Eliminative treatment should be instituted in cases showing a tendency to renal involvement.

DISCUSSION.

Dr. J. B. Elliott, Jr., New Orleans, La.—I have only seen one case of the Stokes-Adams syndrome. The patient died in the second attack, and there was found at the post-mortem examination an atheromatous deposit in the bundle of His. For the acute attack the patient was given morphia and atropire, and while these agents had a very good effect the first time they were given, the patient died in the second attack. The patient was a man seventy years of age, with marked arteriosclerosis.

Dr. J. B. McElroy, Memphis, Tenn.—I have been very much interested in the careful, accurate report made by the essayist of this interesting case. We must, however, from the clinical evidence distinguish between two groups of these cases. One the cardiac group, and the other the neurogenous group.

Much work has been done with reference to the disturbance of the conductivity of the bundle of His, but undoubtedly there are many of these cases which present the symptom of the Stokes-Adams syndrome in which the bundle of His is not involved. Adami reports such a case, and I have autopsied one case myself in which this bundle was involved and almost completely destroyed by a gumma, in which there were no symptoms or evidences of the disease during life. Here I would call attention to those cases which are associated with disturbance of the conductivity of this bundle and those cases which are due to blocking as the result of a syphilitic lesion or lesions. Because of this very much may be done from a therapeutic standpoint. Undoubtedly gummata do cut off these connections between the contractions arising in the auricles and traveling from this bundle into the ventricle, as well as sclerotic conditions, as well as lesions the result of rheumatic fever or lesions resulting from either infectious diseases or from ulcerative endocarditis. But when we think of these cases there must remain other groups of cases which are entirely neurogenous which have their effect or origin in lesions of the medulla or some portion of the vagi.

I would like to ask the essayist in closing the discussion to speak of one point in reference to his case, and that is the condition of the aortic second sound.

Dr. J. B. Guthrie, New Orleans, La.—It has not been my good fortune to see either one of the two diseases the doctor has described. In a large hospital service, where the cardio-nephritic cases predominate, I have not been able to find a case that I

was satisfied was a case of true aortic stenosis, nor have I been able to find in the same service or in any other service that I have had access to any case of Stokes-Adams syndrome. Those of us who are particularly interested in studying heart cases are more than anxious to get hold of such a case, and the very uncertainty of it makes our interest all the keener.

Dr. Frank A. Jones, Memphis, Tenn.—With reference to Stokes-Adams disease or heart block, I know there has been the opinion of Erlanger, the opinion of His, the opinion of Leube, and the opinion of others in regard to this disease.

In the last several years I have seen five cases of heart block. Three of these were in men, and two in women. One notable fact in nearly all of these types of heart block is that in the vast majority of instances there was pronounced arterio sclerosis. Not only is there pronounced arteriosclerosis, but, at the same time, there is high blood pressure in contradistinction to arteriosclerosis with low blood pressure, and yet we do not know what the exact pathology of Stokes-Adams disease is or heart block. Leube does not use the terms synonymously. He says we can have Stokes-Adams disease without heart block. We can have arteriosclerosis and not typical heart block.

The whole question resolves itself into an insufficiency of the auricle, or improper action of the auricle.

Erlanger has made some experiments in the physiological laboratories by dissecting out the bundle of His, and at the same time the bundle of His was dissected out there was still pronounced bradycardia. The question is still under discussion and under the eye of the internist. These cases of heart block will have attacks with bradycardia. I have seen one case with bradycardia with a pulse as low as eight for nearly a week before the patient succumbed in a kind of coma instead of having a convulsive seizure. I have not been able to secure post-mortem in any case I have seen. In all of the cases of heart block I have encountered there has always been well defined arteriosclerosis with high blood pressure.

Dr. Gaither (closing).—In answer to Dr. McElroy's question, I will say that as well as I can make out the second sound of the heart was metallic in character. The trouble seemed to be caused largely by the arteriosclerosis through a thick chest wall, and that was further obscured with closing of the valves.

SANITATION IN SOUTHERN CITIES*

By CHAS. A. MOHR, M.D.,
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One of the greatest needs of our Southern cities is modern, scientific sanitation sustained by aggressive and progressive methods, conducted by active health officers and boards of health. Temporizing and perfunctory methods must be relegated to the category of things that might occupy a place in history, but which belong to no sphere of usefulness to mankind.

Associations organized for the advancement of commercial interests exist in nearly every town and city; these organizations are always active in demanding that the municipal government do this or do that, in order that the prosperity and mercantile greatness of the community be increased; also, that the attention of the world be attracted by the cry, "see how we grow." These efforts are invariably enthusiastically furthered by the people and encouraged by the display of their civic pride and liberal contributions of money, in order that others may learn of the importance of their city. Real and potential possibilities are conspciuously advertised, exports and imports are so and so much, the harbor adequate to accommodate any ship, tax rate is low, population increase in the last decade 50, 100 or 150 per cent (most likely effected by annexation of some square miles of the surrounding territory). But how seldom do we see in the array of claims the one which in the final analysis is the greatest any city can boast of, the one which contributes most bountifully to happiness and prosperity, the one which constitutes the most valuable asset a city can possess, a low death rate, or, in other words, a high degree of healthfulness.

More vital to the prosperity and attractiveness of a city than a low tax rate is an accurately determined death rate.

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If my belief regarding sanitation and death rates in Southern cities is correct, the responsibility for a grave fault attaches somewhere. Doctors in the South are as well informed on the causes of disease, modes of transmission, prophylaxis, and the principles of hygiene and sanitation, as those in any part of the globe, therefore no blame can attach to them through ignorance of the subject; however, not only blame but censure is justified if the doctors in a given community, when as individuals and as organized bodies, they fail to inform the people and the local government of the conditions and the necessities. As a matter of fact the blame is most commonly to be placed upon the people themselves or upon the civic authorities. No effective plan of sanitation is possible without the help of the governing powers; these provide the law and the means to work. With wise laws and able executive management successful sanitation is merely a matter of dollars and cents. Dollars and cents! so easily expressed and so hard to possess.

The indifference of the average citizen and of civic authorities to the necessities in the premises is astounding. Usually nothing less than a visitation of pestilence shakes them out of their apathetic mood, and then—O then—those doctors! If a city is known by its doctors to be unnecessarily unhealthy, that it has an unnecessarily high death rate, they exhibit moral cowardice if they fail to rise in public and tell the story in no uncertain terms. Further, the people should be told that this and that must be done, that so and so much money must be expended yearly to remedy the conditions and to make the town a place where men can live in health, in peace and in happiness. I know that commercial interests will rise in wrath that "slander be uttered about our town," but such steps must often be taken; even those who lead may suffer for the time. Among men where fair dealing is the rule, if the cause be right and just, it often happens that those who most did blame will be the most helpful in the good work which is sure to follow, and not only no bad feeling is left, but much accomplished. The first step necessary to correct great evils and shameful wrongs is to expose them, and not until then can they be eradicated. Have we all been true to our claims as guardians of the public health, or have we been or even now are we justifying the utterance of Dr. Osler, who said, in speaking of the prevalence of typhoid fever and of the things done and undone: "This to our shame, we do with full knowledge and with an easy complacency that only years of sinning can give?"

We speak among ourselves of preventable diseases, we talk to laymen with an air of certain knowledge of what preventable diseases are and how they may be exterminated, we are looked at in wonder that such small heads can carry so much learning, but what are we doing in our Southern cities to prevent the preventable diseases? Talk is good, but to *do* is better. If any disease *is* preventable, then it should be prevented; if the means are within our reach and we fail in doing what we can in preventing these ills of mankind we are recreant in our duty. If doctors know these things and do not act accordingly, then there is little that is altruistic in the practice of medicine. Parenthetically, I will say that I have observed that medical men, when delivering speeches before laymen, rarely fail to remind their hearers of the altruism that distinguishes the work of the practitioner of medicine. If we do not believe that any diseases are preventable, let us stop talking about them as such.

The specific plan of sanitation for a city must be drawn in accord with the framework of the government. Whatever the plan, supervision by a board of health composed of medical men should be provided. If certain functions, such as the management and care of streets, water supply, sewers, plumbing, garbage, etc., are delegated by charter or ordinance to separate heads, in order to secure the desired results, the department of health must be in close relation to all departments and

active co-operation must be the rule. Another essential requirement is, sufficient funds must be available to the health department, the amount depending upon the area and topography of the territory of operations, population and general local conditions. These provided, with the necessary ordinances and laws, the Board of Health and health officers are prepared to work.

Several divisions are essential in an efficient plan, which may be briefly stated as follows:

1. Vital and Mortuary Statistics.
2. Sanitary Inspection Service.
3. Educational and Information Service.
4. Laboratory of Bacteriology and Chemistry.
5. Meat and Milk Inspection Service.
6. Infectious Diseases.

This presumes the provision by the city for the other departments previously referred to, plumbing, garbage, water, etc., which may or may not be immediately under the Board of Health.

Reference to reports of the Census Division of the United States will disclose the fact that few Southern cities are represented in the registration area, and the inference is justified that the work in that direction in our cities is either not done at all or that it is done in a most perfunctory manner, which, in my opinion, constitutes a fundamental wrong, correction of which is necessary before any plan of sanitation can be effective. Statistics are of no value unless the data upon which they are based are accurate. The function of the division of Vital and Mortuary Statistics is to collect and tabulate accurate data. Of what value is the stated mortality or death rate of a city unless the data upon which these are calculated are correct? The death rate is the most tangible and most impressive evidence of the healthfulness or unhealthfulness of a city, therefore it should be correct. In determining the death rate two factors are essential, the number of deaths and the population, both of which must be correct if the rate is to be correct. Supported by the proper legislation the former can be assured by an active health department. Estimations of population should be avoided, actual determinations should be made. The United States Government's method of estimation between census years is open to grave objection, its arbitrary character condemns it, therefore a census taken each year should be included in the plan of sanitation. I see no reason why this should not be carried out by every city.

No system is complete without a well-organized and equipped corps of trained sanitary inspectors to operate directly under the health officer. The practice, which seems to be common in our cities, of a single annual house-to-house inspection by a detail of uninformed and untrained policemen, detailed from the regular police force (and done perhaps under the direction of the Chief of Police) may have its value, but I have never been able to discover it. Measures that are calculated to give a false sense of security frequently do more harm than good. House-to-house inspection should be carried on from the first day of January to the thirty-first of December, inclusive. A record should be kept of every house in the city, detailing certain facts and the findings of every inspection. After inspection, when needed, correction of insanitary conditions must follow and follow promptly. A volume might be written on the details of a sanitary inspection service, how conducted and in the relation of possible results. The best advice to one who does not know and would learn is, study the works of Gorgas, Wood and other workers in this field of activity, and, in addition, visit certain tropical cities, Havana for instance; then to "stop and look and listen," and then if he has forgotten how, to learn to blush for shame that these foreign folk *do* and seem to know so much and we accomplished Americans *do* and seem to know so little.

The establishment and maintenance of bureaus of education and information on matters relating to hygiene and sanitation by departments of health is a crying need. Education

of the people along these lines is essential to obtaining the best sanitary conditions in our cities. Some of our Southern States have done and are still doing great work along these lines, notably that done by the State of Louisiana under the direction of Dr. Dowling; but in very few cities, if in any, is this valuable adjunct to a system of sanitation included as a regular function of the health department. Such work must be systematically pursued. Occasional outbursts, exciting enthusiasm among the people, have their uses, and are generally forthcoming during times of threatened or imminent danger, but they can never take the place of including it in a plan of sanitation, systematically and aggressively pursued. To obtain the desired results this is a necessity.

Since health officers and Boards of Health possess, or are supposed to have, knowledge on matters of sanitation and hygiene, the people have a right to demand that such information as these persons or bodies can give should be forthcoming, and that therefore provision should exist for its dissemination, and the logical channel is the office of the Board of Health and the person in charge, the city health officer. In this way will we secure cooperation of the individual citizen, so that each one may contribute his share so necessary to thorough sanitation.

The value and necessity of a Laboratory of Bacteriology and Chemistry is so plainly evident that I shall not elaborate thereon, but shall only call attention to the fact that the laboratory is absolutely essential to reveal the carriers of certain diseases, a factor in sanitation that we have only in recent times taken into consideration, and one which, if we would raise our cities to a high sanitary plane, demands our closest attention. I need only cite the malaria carrier as a source of danger and a more potent factor in keeping death rates high than is generally supposed.

A scientifically conducted Milk and Meat Inspection Service belongs to every good plan of sanitation. This should provide for the regulation of management and care of dairies and slaughter houses and the handling of all products.

We need to institute and maintain more stringent measures against infectious and contagious diseases. From all that I have been able to learn, taken as a whole, our cities have been derelict in this phase of the work. The advent and progress of an infectious disease must be closely watched. Much depends upon the vigilance of the health officers. No child should be permitted in a school-room unless protected by vaccination (compulsory vaccination would be a blessing) and periods of detention. Modified quarantine regulations should be established on a scientific basis for scarlet fever, diphtheria and measles. A period of at least eight weeks from time of invasion should obtain in scarlet fever, cultures from the throat should determine the time in diphetheria. In my own city the Board of Health has fixed the rule that the placard shall remain posted for eight weeks in cases of scarlet fever, and we have now under consideration an ordinance providing a modified system of quarantine under which children will not be allowed on the streets, parks or public places. To make it possible for a Board of Health to carry out the necessary steps against the invasion or progress of infectious diseases, the proper ordinances and legal machinery must exist.

Unless diseases are promptly reported by the attending physicians no effective work can be done. This they should be required to do unler laws which carry penalties. Little is gained by leaving it optional with the doctor. A recent attempt to gather certain information on typhoid fever convinced me that on an average about one-half of the cases which occur are reported. This obtains in cities in which the disease is by law reportable. A very important detail of the fight against infections is the sanitation and hygiene practiced in the infected home, therefore it should receive the most careful attention. To this end it should be one of the functions of the Health De-

partment to give instructions in every case. The attending physician should be relieved of this part of the work as far as possible.

Problems in sanitation must be approached much in the same way that a doctor approaches his patient and follow the same methods in the treatment. A diagnosis may be reached if the treatment is to be along rational lines, and rational treatment demands, if the possibility exists, removal of the cause of the trouble. As there is rational practice of medicine, so is there rational practice of sanitation. There are two distributors of disease that nearly all persons have learned to know, the house fly and mosquito. The cry is screen against the fly, screen against the mosquito! I once listened to a discussion on the advisability of an ordinance providing that every householder should screen his house, to apply to rich and poor alike. I should stigmatize such as irrational sanitation. The disgrace is not in having no screens, but that there should be any necessity for the screens. In this case rational sanitation would demand the extermination and elimination of the two disease-breeding insects, and since this is not an academic proposition, but things feasible and can be done, I submit that they should be done.

A few words relative to the head of the department of health, usually designated as City Health Officer. As I said in the beginning, the time for temporizing and perfunctory methods has passed. In order that efficient and thorough work be done, trained, competent men, devoting all of their time to the work, are an absolute necessity. The positions must carry salaries adequate to the service expected and rendered. Among the replies received from many cities all over the United States, I received one from a Southern city stating that they (18,000 inhabitants) had no health officer because of refusal by the city to pay any salary whatever. No sanitation worth the name can be effected unless competent men are provided to do the work.

Our civic authorities who control the source of supplies and the purse will say at once, "But this costs money!" Certainly it does; it costs money, and more than that, it costs a great deal of money. Suppose it does, the question becomes, "Will it pay?" Each community must answer this for itself.

The elevation of our cities to high sanitary planes is not an academic question to possibly be solved by posterity some generations hence. It is the most important question of the day, to be solved immediately; it is merely a financial question, one of dollars and cents, nothing more, nothing less. If not already done, the matter should be put to our people in no uncertain terms and clearly put, so that he who runs may read. Then let the people answer.

What greater asset from a commercial and moral point of view can there be than the record of a low death rate and a reputation for healthfulness? What greater boon than good health? What factor in our daily lives contributes more generously to the peace, welfare and happiness of a community than good health and wholesome, sanitary and healthful surroundings? The only means through which we can possess ourselves of this blessing is, Modern, Scientific, Aggressive and Progressive Sanitation.

DISPENSARY WORK IN MISSISSIPPI*

By W. S. LEATHERS, M.D.,
University, Miss.

The first dispensary for the treatment of hookworm disease in the United States was organized in Mississippi. It was a natural development after several months of educational work for the purpose of arousing interest and obtaining the co-operation of the people, determining the degree of infection from the disease and its distribution over a given area, and getting the people to come for examination and treatment.

It became perfectly evident that, in order to obtain the results desired, it was essential to use some method which would cause a larger number to respond for examination and treatment. It is true that many of the sufferers from this disease would go to the local physicians, but, owing to the lack of information, the insidious and devitalizing nature of the trouble, a large proportion of the people afflicted appeared utterly indifferent and in most instances would probably never seek the advice of a physician, at least until the disease reached a serious stage, or as a result of some intercurrent trouble. This indifference on the part of the public was in part due to the far-fetched and traditional ideas of the people that they were suffering from malaria, dyspepsia and other much-talked-of ailments, and thousands of these individuals have become the easy prey of quacks and quackery, and are frequently addicted to the use of patent medicines and nostrums of various kinds, earnestly seeking in some way to restore the health which they once enjoyed, and without which they must of necessity experience unmerited sickness, suffering, poverty and hardship.

After casting about for methods of treating the people afflicted with this malady living under different conditions and suffering in varying degrees, the dispensary plan was carefully considered and decided upon as a feasible, systematic and practical way of dealing with this phase of the question, provided the people would grasp the opportunity and respond for treatment. This was to be determined.

With this in view, Dr. John C. Culley, then a representative of the State Board of Health, was detailed to begin active work in Marion County, Mississippi, one of the most heavily infected areas of the State. He conferred freely with the local physicians relative to using the dispensary method, and from the very outset they were, in the main, most heartily in accord with the plan. Through the hearty co-operation of Dr. A. D. Simmons, the county health officer, the organization of the dispensary was greatly facilitated. He, being a strong advocate of the dispensary method from the outset, and realizing the great need of such work in that county, offered the use of five rooms, hall and lavatory in his office building, located at Columbia, without charge, for this purpose. The public-spirited citizens of Columbia and the county seat were interested and informed about the movement. The problem was then presented to the Board of Supervisors, with a request that sufficient money be appropriated to buy the medicine and to circulate the necessary information. This was promptly done and the work authorized. So far as I know, this was the first board of county officials that appropriated money for such a purpose in the South, and I desire to accord to these gentlemen the credit which they are due for their beneficent spirit. Still, the dispensary had to be furnished, and this aspect of the question was presented to the progressive Commercial Club of Columbia. This organization being composed of business men, they very readily appreciated the bearing of such work upon the economic conditions of the county and the State at large, and an appropriation

* Read before the Southern Medical Association, Hattiesburg, Miss., Nov. 14-17, 1911.

was, therefore, made for equipping the rooms. The dispensary was equipped at once and opened for the reception and treatment of patients on December 17, 1910.

Its success was assured from the very beginning, for on the first night each bed was occupied by two patients, and many were turned away because of the lack of accommodations. Being in an experimental stage, it was deemed advisable that the work should proceed in a conservative manner, and that each diagnosis be made by a microscopic examination and every effort made to secure the best results in treatment. Owing to the limited accommodations, it became at once evident that the dispensary was not sufficiently large to take care of the patients coming in for treatment, and as a consequence it was deemed advisable to give both indoor and outdoor treatments.

This dispensary was patronized more largely by indoor patients on Friday, Saturday and Sunday of each week for obvious reasons. The outdoor patients came throughout the week. The indoor patients remained in the dispensary usually from eighteen to twenty-four hours. The outdoor patients were given the thymol to be taken at home, with brief written directions, and each case requested to return until a cure was effected. On returning to the dispensary, a microscopic examination would be made until the patient was assured of results. A card index system was used for keeping a record of the name, address, age, sex, temperature, pulse, history of ground itch, dose, and the name of the family physician of each patient. Thus it will be seen that the work was done upon a careful and scientific basis.

The number of treatments given during the period beginning with December 17, 1910, and ending April 30, 1911, was as follows:

Number treated first time	928
Number treated second time	412
Number treated third time	138
Number treated fourth time	29
Number treated fifth time	6
Number treated sixth time	1
Total number of treatments	1,514

To this total of 1,514 should be added about 230 which have been treated during the succeeding months, making a grand total of 1,744 treatments given approximately to 1,000 individuals.

During the month of May the county health officer ran the dispensary, but it was advisable to discontinue this dispensary on May 31, with the understanding that it would be opened again in the near future.

The educational campaign was conducted as the work of treatment progressed, usually during the first part of the week, or at such times as Dr. Culley could be away from the dispensary. Only a few days were used preliminary to opening the dispensary for estimating the degree of infection, for, owing to previous work in this county, this was scarcely necessary. Each patient coming in for treatment was given a bulletin on the sanitary closet and urged to follow the preventive measures therein discussed. In the event a larger number of outdoor patients had been encouraged to come to the central dispensary, and by having sub-stations conveniently located in different parts of the county, it is obvious that hundreds and even thousands of others could have been examined, treated and taught the necessary preventive measures. There are people who came as much as twenty miles for treatment. There are scores of individuals who have been permanently cured or benefited and are very enthusiastic. Many of these had been complaining for years, and some had spent a great deal of their income for medicine without relief. The work has made a favorable impression. From the standpoint of its educational value, the opportunity afforded for teaching the people that hookworm disease can be prevented and cured, the number treated, and the actual good accomplished, this dispensary was a decided

success. I have thought it well to include the expressions of two citizens of Columbia relative to the work:

"DEAR DOCTOR—In a very brief way I wish to commend the work done by your representative in this county in teaching the people that they could not only be cured of hookworm disease, but could be free from it for all time to come by taking the proper sanitary precautions. The use of this dispensary work in reaching the people was a practical way of doing it, and I feel sure that the method cannot be improved upon. Notwithstanding a great many of our people had been treated for hookworm disease before the work was taken up by the State Board of Health, nearly all of them understood that there was such a disease, and a great many had some conception of the symptoms, still they were slow to come for treatment until they were aroused by the lectures and slides shown by Dr. Culley and yourself and were informed that they could get the treatment free of charge. The dispensary idea is very attractive and reaches a large number who would not come except for the fact that they would be cared for in every way.

"A great deal of good can be done for these patients in every infected county if the Board of Health and the county officials would establish a free dispensary system.

"The work in this county has received the hearty commendation of every man, woman and child, so far as I personally know, and I feel sure that the results warrant the praise given.

(Signed) "C. C. THOMPSON, M. D."

"COLUMBIA, MISS., Sept. 2, 1911.

"DEAR DOCTOR—It gives me pleasure to state that I have taken some notice of the work done in this county through the agency of the State Board of Health, particularly as to the information disseminated in regard to the spread of infectious and contagious diseases and the number treated by the hookworm dispensary at Columbia. I have noticed many evidences of good accomplished by this dispensary. It has treated beneficially a large number of persons who otherwise would not have received the treatment. I therefore heartily endorse the work and believe it should be continued. I am, respectfully,

(Signed) "ED H. MOUNGER,
"Attorney-at-Law and State Senator."

It was perfectly clear that the above type of dispensary is more expensive than the strictly outdoor method, but I am of the opinion that if it were possible to have a central dispensary in each heavily infected county, with sub-stations which could be placed and changed in order to reach every portion of each county, it would give the best results. The central dispensary, while it may be relatively small, could be used for treating very serious cases until cured, and thus make of them object lessons for convincing even the most skeptical of the beneficial results accruing from this work. The dispensary work in the heavily infected counties should be more permanent if the best and most lasting results are to be accomplished. They will then serve in the most effective way as stations for educating and treating the people

For certain reasons there was a lapse in dispensary work in Mississippi during the first half of June, with no intention, however, of discontinuing this method of treating the people. During this month I was given the opportunity, through the courtesy of Dr. Rose and the kind hospitality of Dr. Dinsmore, to observe with interest and profit the dispensaries as they were being conducted in Alabama.

On returning to Mississippi, Dr. Rowan was advised to organize a chain of dispensaries in Harrison County and Dr. Whitfield in Lamar. Dr. Rowland and Dr. Stingily were also requested to take up such work in the counties of Scott and Neshoba as soon as practicable.

The arrangements for the work in Lamar County were begun about the middle of June

and in Harrison County the latter part of the month. Dr. Whitfield appeared immediately before the Board of Supervisors in Lamar County and obtained from them an appropriation of $150.00 for such work. The places for holding the dispensaries were decided upon, the people informed, and the first dispensary opened in Lamar County on June 19 and continued for six weeks, with assignments of five days per week for dispensaries.

The Board of Supervisors of Harrison County, Mississippi, made an appropriation at the request of Dr. Rowan, and the first dispensary opened on July 5. In Harrison County fourteen dispensaries were conducted for varying periods of time during a period of six weeks and four days, using six days a week for conducting the dispensaries. The large number of dispensaries in this county was essential, owing to the size of the county and the scattered and rather inaccessible population. An accurate record was kept of each patient, the name, address, name of parent, age, sex, color, clinical or microscopical examination, doses, number of treatments, and remarks.

SUMMARY OF DISPENSARY WORK IN MISSISSIPPI.

County	Physician	—TREATMENTS— 1st	2nd	3rd	4th	5th	6th	Total	Time Wks.	Days
Harrison	Dr. Rowan	2,621	1,958	1,464	820	64	6	6,935	6	4
Lamar	Dr. Whitfield	1,615	901	456	29	4	0	3,005	6	0
Pearl River	Dr. Whitfield	2,481	1,403	892	55	9	0	4,840	5	0
Tishomingo	Dr. Boswell	1,044	345	77	7	4	1	1,478	5	0
Neshoba	Dr. Rowland	1,322	508	224	43	12	0	2,109	5	0
Jones	Dr. Rowan	2,532	1,462	896	103	2	0	4,995	5	0
Total		11,615	6,477	3 909	1,057	95	7	23,362	33	4

As many as forty dispensaries have been conducted in these counties, and, as indicated, resulting in the treatment of 11,615 individuals, to whom were given 23,362 treatments. Dispensaries are being organized in the counties of Leake, George, Alcorn and Lincoln, and other counties are extending invitations for the work to begin as soon as practicable.

The value of hookworm dispensaries in Mississippi, and, indeed, in the entire South, can only be properly measured in the light of a larger experience and after having been conducted over a longer period of time. The peculiar conditions in each State, the different factors to be dealt with in each county, and even the varying agencies at work in the respective communities, offer at every step somewhat different problems. Considering the enormous amount of work to be done, the fund at our disposal has been wholly inadequate, and, owing to the fact that the district directors have had to do in large measure all of the work, certain details of procedure have not been as carefully emphasized as would have been possible under more favorable circumstances. I have read with interest the splendid work of Ashford, King and others in Porto Rico, and, recognizing the peculiar conditions of the South and in some instances unwarranted prejudices against the work, the results obtained in the hookworm campaign in the South have a far-reaching significance in the realm of public health and preventive medicine. The present dispensary method can and will be improved upon, but untold good has already been accomplished. The results are most gratifying.

In organizing dispensaries in a county the order of procedure should be to first wage an active educational campaign throughout the county and determine the degree of infection and distribution of the disease. In this connection the sanitary survey which in the future will be of fundamental importance should be made. If possible, the places and dates of the dispensaries which are to follow should be advertised as the educational campaign progresses. This is not always possible, for the reason that in many instances it is not wise to attempt to obtain an appropriation

from the Board of Supervisors until the people have been aroused and indicate their desire for such work. The physicians of the county must be seen individually or collectively for the purpose of securing their interest and hearty co-operation. This may be done at a regular meeting of the County Medical Society, and resolutions adopted asking of the Board of Supervisors that an adequate appropriation be made. The representative of the State Board of Health, accompanied by the county health officer or a committee of physicians appointed by the society, presents these resolutions to the Board of Supervisors. On obtaining the appropriation, the places of holding the dispensaries and the dates on which they are to be conducted at each location should be extensively advertised throughout the county. This may be done by newspapers, interviews, public addresses, and by telling the people who patronize the dispensaries to inform their friends about the work.

To summarize: The hookworm dispensaries in Mississippi have accomplished large results, and, I think, can be regarded as a great success. The physicians are co-operating heartily with the representatives of the Board of Health, and this is but another instance of the exemplification of the altruistic spirit of the true physician. The public is also much interested and is co-operating in a most encouraging way. The dispensary method is a systematic and practical mode of reaching large numbers, and especially those who otherwise would be indifferent. It is of inestimable value from an educative point of view. There is, perhaps, no agency which will immediately arouse more interest and secure the favorable consideration of the public to better advantage than the relief which comes to scores of individuals who have been languid and are sufferers in varying degrees from this malady.

The dispensary method affords a splendid opportunity to impress upon the masses the imperative need of better sanitary conditions around the home, school, and in all community life. It brings thousands of infected persons for treatment and examination, which results in increasing the standard of vitality, and thereby is a marked factor in reducing the death rate from this and intercurrent diseases

After the dispensaries are closed in a county the educative value of the work seems to be well attested by the fact that it is almost the uniform testimony that a larger number of people apply for treatment. This shows that the people have been taught in a measure to guard more sacredly their happiness and physical welfare. It all unquestionably means happier and better homes, increased strength and vigor, a higher type of citizenship, greater individual prosperity, and an immense economic saving for the citizens of a great and growing commonwealth.

"THE TRAINING OF THE SPECIALIST."*

By M. M. CULLOM, A.B., M.D.,
Nashville, Tenn.

In this day it is a common expression to hear one say, this is an age of specialists. And it is an expression which seems to have burned its way into the minds of men.

Instead of retaining its former common significance as applied to one who makes a special study of eye, ear, nose and throat diseases, it is now applied to almost all lines of human endeavor, and it is a poor calling that does not boast its special workers.

* Chairman's Address before the Section on Ophthalmology of the Southern Medical Association, Hattiesburg, Miss., Nov. 14-17, 1911.

A live question which is attracting attention just now is the training of specialists in the line of eye, ear, nose, and throat work.

In what way may the specialist best obtain his training and when may he rightfully hold himself out to the public as a specialist? It is a question of great importance, and one which is of interest to this body, and I think we could do no better than give it our earnest attention. All thoughtful men will agree that there is room for improvement in the present haphazard manner in which men acquire their training for our line of work. Anyone holding a medical degree after a little study or no study at all may hold himself out as a specialist, and proceed at once to undertake the most delicate and dangerous operations of surgery.

There are many men, who make a conscientious effort to master the intricacies of special work. They visit the large clinics in this country and abroad and endeavor by observation and whatever practical opportunities they may obtain to perfect themselves in this line. But aside from the very few who obtain staff appointments as internes their opportunities for acquiring a practical knowledge of their specialty are far more meager than they should be. Outside of the internes, who are sternly held in line by their exacting duties, there is no feeling of responsibility to hold them to their tasks. The allurements of a great city are often a more powerful magnet than the desire to learn, and the fact that no taskmaster is behind them to scourge them to duty makes it easier to hearken to the siren voice of pleasure.

Except in refraction they are given little opportunity for actual dealing with patients, and most of their time is spent in watching other men work—than which to my mind no task is more irksome. Opportunities to operate are becoming increasingly scarce and the technical skill absolutely necessary in our work correspondingly harder to obtain.

A careful investigation of the method of teaching oto-laryngology in the undergraduate and post-graduate schools of this country and abroad was made by S. McCuen Smith, of Philadelphia, as a basis for a paper read before the American Laryngological, Rhinological and Otological Society at its last meeting in June.

It showed in the main a conscientious effort to teach this branch to the undergraduates. It brought out the opinion of at least one eminent man that while undergraduate instruction was not what it should be, it was on a better basis than postgraduate teaching, which he declared to be unsatisfactory.

It is my belief that the time has come when the profession should seriously undertake the problem of special training, and provide facilities whereby any physician may be afforded an opportunity to acquire special skill.

There are many reasons why this should be undertaken. The optician question is a burning one. Its members are conducting an active, organized campaign for recognition, and are using every effort to wrest refraction from the medical profession, and make of it a commercial business. There is a grave danger in their activities. Aided by laws giving them legal standing they appeal to a public, which has very hazy ideas concerning the difference between oculist and optician.

It does not occur to the average man that the optician occupies the same relation to the oculist that the druggist does to the physician, and that it is quite as rational to go to the druggist for medical advice as to the optician for examination of the eyes.

With a law upon the statute books licensing men to practice optometry the average man sees only one thing—that the services of the self-styled optometrist are very much cheaper than those of the physician. This brings into play the working of an economic law which holds in other lines of endeavor as well as in finance.

Gresham's law in political economy holds that a bad dollar will drive a good dollar out of the country, the reason being that nations strive to pay their debts with the cheapest money obtainable. Individuals likewise en-

deavor to secure services of any kind at the lowest possible cost, and the tendency is so strong that the undiscriminating public is likely to throw their patronage to the cheap worker, and leave the field so meager that the professional man, with his long years of study and expensive training, cannot afford to enter it. This would, of course, be a blow at scientific advancement and a direct injury to the welfare of the race.

One remedy for this unsatisfactory state lies in a better education of the public as to the dangers of consulting commercial men upon professional matters, and another lies in resisting the efforts of the so-called optometrists to obtain legal recognition.

These efforts have been checked wherever vigorously resisted and the good work of the American Medical Association along this line merits our gratitude and hearty endorsement.

Another remedy lies in better post-graduate facilities, enabling us to turn out men thoroughly grounded in theoretical knowledge and endowed with the requisite practical skill.

I believe that a prescribed course of study covering at least two years should be laid out. It should include a thorough course of dissection of the head and neck, the performance of all the operations upon the cadaver, thorough courses in pathology and bacteriology, the theory and application of lenses, and, of course, all the operative and practical work with patients possible.

In his investigations, Dr. McCuen Smith found that the tendency is all toward clinical teaching and that didactic methods are passing. I believe that there should be a judicious combination of both and that the scholarly and literary side of our work should not be neglected.

You may say that it is the clinical work that the men like and want and that the other side would prove irksome. Some one has said that if we only do what we like we become less than we are capable of and do not obtain the highest development which should be the goal of our strivings. The two years of study could be crowded full of the most profitable labor and should turn out well-equipped men.

A committee from the American Medical Association and other leading special societies could map out a suitable course of study.

This course of study should lead to a degree. There are numerous reasons why a degree should be conferred. First, as a reward for patient study; and, second, as an endoresment by the institution conferring it. It would stimulate men to complete the entire course, and it would educate the public to demand the evidence of thorough training. It would also discourage the six-weeks specialist who has been turned out in such numbers to our mortification and discredit.

The question would then arise as to whom the post-graduate teaching and conferring of degrees should be entrusted.

It is my belief that separate schools should be erected in connection with the eye, ear, nose and throat hospitals of the large cities. Their clinical material is more abundant than in most medical schools and for another reason I believe that post-graduate teaching should be radically different from under-graduate teaching. It is not the aim of under-graduate teaching to make specialists. It is, rather, to teach them how to recognize dangerous conditions and to know when to seek advice. An attempt to combine post-graduate and under-graduate instruction in the same institution would probably prove confusing and interfere with the efficiency of both.

When should a physician undertake the study of a specialty? I am aware that there is a time-honored tradition in our profession that one should only take up a specialty after years of general practice. I wish here and now to proclaim myself an insurgent upon this particular dogma. To my mind the best possible time to take up special work is upon completion of an interneship in a general hospital the year following graduation. The best answer to the

doctrine of years of preliminary general practice is given by those men one sees in every large special clinic endeavoring to master the intricacies of special work long after they have passed the age of receptivity and enthusiasm. The effort required of many of them to assimilate the simplest elemental facts is little short of pathetic.

A man should begin his life work before he is thirty, and the sooner he can begin after the necessary preliminary training the better. Years of preliminary practice would result, generally, in one of two things. A man would become so absorbed in his work if successful, that he would have no desire to change it. If not successful, he would probably find the same experience awaiting him in another line of medicine. There are, of course, notable exceptions to this rule, but, generally speaking, I believe it will hold.

I am a firm believer in the most rigid preparation. The ideal preparation is a collegiate course leading to a degree, followed by the four years in medical college, the year or two years in the general hospital, and then the special line, followed with all the earnestness and enthusiasm that a well-trained mind can bring to bear upon it.

967 Elm Street.

DISCUSSION.

By Dr. Savage: It is not customary to discuss the Chairman's address, but a very vital question to the whole profession has been raised, and it seems to me that a discussion is in order.

By the Chairman: The chair would be very pleased to hear a frank discussion of the paper by the section.

By Dr. Dupuy: Could not we crystallize this principle embodied in the address of the chairman by making a motion which would give him power to appoint a committee to get to work? How can we approach the question? By having the different sections on the eye, ear, nose and throat co-operate?

By the Chairman: I think that would be the proper step—the chairmen of the different sections could work together.

By Dr. Ellett: If we could be the means of inaugurating a movement which would lead to something of that sort, it would be a good thing. Such a course is given in England, by the Oxford University, leading to the degree of Doctor of Ophthalmology. They have gone ahead of us in this respect in England. I think we all feel the need of this very thing that has been brought out in this address, and it would be a fine thing for this section, if a movement could originate in it that might eventually lead to such an end. We are only a few, but that need not deter us from successfully inaugurating such a movement.

By Dr. Savage: Make a motion to that effect.

By Dr. Ellett: I second Dr. Dupuy's suggestion.

By Dr. Savage: The degrees spoken of by Dr. Ellett pertain to oculists only. I don't know that we need a degree for nose, ear and throat; most of those fellows—quacks—that are going around the country, are pretending to be eye men. What would you suggest?

By Dr. Dupuy: How about those six-weeks' throat specialists, who remove tonsils, etc.? There should be a degree applying to the whole specialty.

By Dr. Feingold: This whole question was taken up in Vienna three or four years ago.

By Dr. Savage: If the chairman would appoint a small committee from this body, and ask that similar appointments be made from the other bodies, and that the work be taken up systematically, something might come of it.

By the Secretary: I have in mind something that happened while I was in the same hospital where the doctor is. One of the attendants or students there taking a six-weeks' course in opthalmology, rhinology, etc., wanted to use the ophthalmoscope once and asked Dr. Bruns about using it. Bruns was in charge of the department. Dr. Bruns is not only suave in manner, but in his speech, and said, "Here is the instrument and there is the patient; go ahead and use it." The student asked him how long it would take to learn to use the ophthalmoscope, and he said, "About two years," and the student turned and left him.

By the Chairman: Dr. Feingold, we would like to hear from you.

By Dr. Feingold: There is little to add except to say that three or four years ago that question was taken up, if my memory does not betray me, by the University of Vienna. The question was considered how far it would be advisable to create doctors, or other titles, of the different specialties. A good deal of discussion was raised by that, and, while nothing came of it, it was brought out, that a number of men would take appointments in hospitals in order to get a certain title, without really knowing very much about their specialty, and it was considered as feasible, but at present not practicable, to grant such degrees.

I would like to bring out this side of the question. It is unquestionably very advisable, even our duty, to have in all lines the men capable and absolutely and thoroughly familiar with every phase and every state of the specialty which they practice.

We must take that question from the broad standpoint. We must see that the public gets proper men in all lines to do the work for them.

It is entitled to perfect service from the ophthalmologist, the rhinologist, the dermatologist, the X-ray man, etc.

But, are we, in this broad, big country of ours, where the cities are so far separated from each other—are we able at present—have we the right at present—to insist that each man that practices ophthalmology, rhinology, dermatology, orthopedics, or X-ray work—have we the right to ask of that man, in

a sparsely settled country, with comparatively little guaranteed income, have the right to ask of him the same amount of knowledge—has the community the right to demand the same amount of knowledge of him that it might ask of the man who settles in a larger city? I am asking this question for the reason it offers, to my mind, a great stumbling block to any such movement as proposed by our chairman; the difficulty which I am now pointing out would arise. We would have to adopt two different standards, one for cities which give a man a logical income for the amount of labor and time invested, and another lower standard which might be permissible in a smaller community.

By Dr. Herron: I believe this would be a great thing. This question that we must provide specialists for smaller cities where there is very little population to draw from should be considered, of course, and that is the difficulty in expecting that that man should have all the knowledge which our ideal demands. His pay is poor, and he has no chance to continually gain any experience compared with those of us in the larger cities. Consequently, even if he has brought along some knowledge from his school, he may grow rusty and after awhile his ability in opthalmology may not be as great as that of one who has just received his diploma.

I suppose all those questions will have to be discussed thoroughly and not unless we take this special question into consideration will we have arrived at a proper solution of the problem.

But I want again to remark that this question does not apply only to ophthalmology, because we are to meet this trouble in every specialty, no matter what its name and no matter what organ it plays on.

By Dr. Dupuy: Dr. Feingold has offered a suggestion. If you take up the question from a geographical standpoint, I think he will admit that you will not find a specialist in any line of work in any town with a population of less than five thousand. Again, take Louisiana; we have towns like Alexandria, with ten or fifteen thousand; Monroe, fifteen thousand; Lake Charles, twenty thousand; Shreveport, away up. Of course, you will find men there doing special work, and I believe they are very well equipped men. In small places, say of five thousand population and less, at a short distance from Charles, a man practicing a specialty would not dare settle there; he cannot be a very well qualified man to go to such a small place as that; Lake Charles would absorb all his work. Superior work is bound to tell in the long run, and a man would find that, while he may just have attended a polyclinic he would be frozen out by a man fifteen or twenty miles away. That question would settle itself, and it would be a question of the survival of the fittest that, I think, would eventually settle the question.

Of course, it has to be that way. As soon as Dr. Feingold gave expression to his idea, I immediately thought of my state and thought of my former home, New Iberia, and of Franklin. Now, there could not be specialists successfully practicing in Franklin or in Thibodaux, for they are too close to New Orleans, and in less than two or three hours they can come into our city and consult a first class man. Take Lafayette, with 10,000 people. There is a good man there. Go to Crowley, there is a polyclinic man there, but he does not do much work. All the heavy work goes to either Lake Charles, Lafayette or Alexandria, and even to New Orleans. They even leave Shreveport to come to New Orleans, just as some leave New Orleans to go to New York or Chicago.

So there would be this eternal question of the survival of the fittest, and I think we can well take the initiative along broad lines, because it will be a tremendous question to settle, and it would be eminently proper for the members of this association to take the initiative to try to bring about some solution. It may take a few years, but I think we should appoint a small committee. I believe the suggestion is good to appoint a committee to communicate with committees from other associations; they might get into correspondence and they might offer something tangible for our next meeting, or rather for the next meeting of the American Medical Association, where we all meet.

To crystallize this, I would make this motion, that the president be empowered to appoint a committee for that specific purpose, of which he shall be chairman—a small working committee.

The motion was duly seconded by Dr. Ellett.

By the Chairman: I would prefer to make Dr. Dupuy chairman of that committee, with the doctor's permission. I would be glad to serve on it and do everything I possibly can. I don't think we could do better than to appoint that committee.

The motion has been made and seconded that the chair appoint a small working committee to take this matter up in conjunction with similar committees from other sections. What is your pleasure?

The motion was unanimously carried, and the chair appointed on the committee the following members: Dr. Dupuy, Chairman; Dr. Savage, Dr. Feingold and Dr. Ellett.

CONGENITAL MORPHINISM, WITH REPORT OF CASES

By GEO. E. PETTEY, M.D.,
Memphis, Tenn.

Congenital morphinism is a rather rare condition. Comparatively few opium-using mothers conceive and fewer still of the children born of such mothers live beyond the third day after birth. This high mortality among the infants of such mothers is not unavoidable, but, managed as they usually are, a large majority of children born to such mothers die on the second or third day after birth. This is due to the fact that the child's blood and tissues are as fully saturated with the narcotic as are those of its mother; in fact, so far as the physical elements of the addiction are concerned, the child is as much an habitue as is its mother. Severance of the placental circulation through which the child had been receiving the narcotic shuts off that supply, and if the drug is not administered to the child it suffers the shock and collapse incident to the abrupt withdrawal of opiates from an habitue. Few adults are able to stand such a strain, therefore a newly born infant could not be expected to do so. Some infants born under such conditions, however, are managed so as to preserve their lives, and a few of them have come under my care. Note the following cases:

In May, 1901, W. T. B. and wife came for treatment for morphinism, bringing two children with them. One a boy of three years, the other a girl one year of age. The mother was using morphine before the first conception, and when the baby was born it was fortunately under the care of a physician who realized the danger of the sudden withdrawal of an opiate from such an infant, and he gave paregoric in full doses for the first three days and then the baby was put to the breast and allowed to get its drug supply in that way. When this child was a year old an effort was made to wean it, but it was very fretful and suffered so severely that the mother says she did not have the heart to deny it the breast, and it was allowed to continue to nurse; notwithstanding this, however, and notwithstanding the fact that she continued to use the opiate and that menstruation was absent, she conceived again and the girl was born two years after the boy. This child was managed in the same way as the first for the first few days and then both children were allowed to nurse. They both received their narcotic through the milk and the mother had not succeeded in weaning either of them, therefore they were brought with her for treatment.

The mother and children were prepared for the withdrawal of the opiate by active elimination, the opiate was discontinued, and they were given my usual treatment, the children taking the same remedies as the mother, but in relatively smaller doses. The children stood the treatment as well as the mother and all were brought out in good condition in a short time. Neither of the children was allowed to nurse after the treatment. The mother was much emaciated from the drain of nursing the two children, but her convalescence was rapid after the children were weaned, and both the mother and the two children have remained free from their addiction. The children are healthy and vigorous and show no evidence for their former addiction. It has now been a little over ten years since these cases were treated.

In November, 1909, a Texas physician wrote asking advice as to the management of his wife, whom he said was addicted to the use of morphine and was about seven months pregnant. Not being able to find anything in medical literature to guide him in the management of such a case, he wished me to give him such aid as I could. Had the patient

*Read before the Southern Medical Association, Hattiesburg, Miss., Nov. 14-17, 1911.

been near me I would have taken her off of the drug even at that advanced stage of pregnancy, but a long railroad journey for such a patient made another course more expedient.

I wrote to him that I thought we would be able to carry his wife through her confinement without complication and advised that the use of the opiate be continued without any effort at reduction. I also called his attention to the importance of keeping up active elimination both by bowels and kidneys during the remainder of gestation and suggested suitable remedies for that purpose to the end that the patient's system be kept in the best condition and be as nearly free from toxic matter as possible at time of her confinement. The only complications likely to occur being of toxic origin.

These suggestions were faithfully carried out and on December 30 she was delivered of a healthy child at full term in a normal labor. Six hours after the delivery the child began to show signs of restlessness and discomfort, and following the plan I had outlined it was given a drop of laudanum, and this was repeated in half an hour. This did not give relief, and one hour later two drops were given at one dose. This gave relief and the baby was quiet for several hours, but when it began to show signs of discomfort again, three drops of laudanum were given at one dose. This proved to be a fairly effective dose, and a dose of this size was given every six hours for the next two days. By this time the milk flow was fairly well established, but the supply was not abundant and the child did not get as much narcotic through the milk as it had been accustomed to before birth, and it was found necessary to supplement it by the administration of two drops of laudanum three times a day in order to keep the child free from abstenance symptoms. When the child was a few weeks old an effort was made to discontinue these doses and depend upon the supply from the milk alone, but the child was very fretful and restless when these doses were not given, so it was thought best to continue them until the mother and child could be sent for treatment. This was done when the child was two months old.

Upon admission the mother was found to be using about ten grains of morphine daily, the infant was nursing and receiving in addition to the quantity it obtained from the milk, from six to nine drops of laudanum daily. Both were prepared for withdrawal by thorough elimination and the drug discontinued at once in both cases. The mother was kept under the influence of hyoscine to a moderate degree for a couple of days and the child was allowed to continue to nurse. Within six hours from the time the administration of hyoscine to the mother was begun, the child showed distinct signs of the effects of that remedy, but it was fretful and manifestly uncomfortable. At this time a dose of 1-1000 gr. hyoscine was given to the baby and this dose was repeated every four to six hours for the next thirty-six hours. By the end of the third day from the withdrawal both patients were fairly out from under the influence of hyoscine and all other remedies and were comfortable. On the fourth day their condition was still more satisfactory, and from that time on their convalescence was normal and uninterrupted. Neither of them suffered during the treatment to such a degree as to show it.

The doctor, the husband and father, writes under date of November 4, 1911, saying that both mother and baby are in good health and free from their addiction. He sends picture of the little girl, who is now a hearty, robust child of two years.

Every child born of an opium-using mother should be given an opiate for the first three days after birth. After that the milk may be depended upon to contain enough of the drug to satisfy the demands of the child's system, or if it is thought best not to allow the child to nurse, the administration of the opiate should be continued until such time as the child is strong enough to stand the withdrawal. By this means their lives can be pre-

served. The results obtained by two mothers who have come under my care illustrates this point:

Mrs. M. J. came for treatment May, 1910. She had been taking McMunn's Elixir of Opium for thirty-one years. Is the mother of eighteen children; only the first two and the last one lived beyond the third day after birth. The first two children were born before she became addicted to the opiate. During the third pregnancy she was threatened with miscarriage and McMunn's Elixir of Opium was given to prevent it. During the last half of the period of gestation the opiate was administered to her two to three times a day, and while it served the purpose of preserving the pregnancy, it also fastened the opium habit upon her and she was not able to throw it off. The child was fully developed and apparently perfectly healthy, but on the day following its birth it began to show signs of illness and it grew progressively worse and died forty-eight hours after delivery in convulsions. Neither the physician in attendance nor the mother understood the necessity of giving the child an opiate and none was given. The death was attributed to unknown causes.

This pregnancy was followed by another within fifteen months, in which she was confined under the same management, with death of the child within three days after birth, and this pregnancy, by another and another until this woman had given birth to fifteen children while using an opiate habitually. All the children died within three days from their birth, most of them dying by the end of the second day. The same physician attended her in all these confinements, and both the mother and the physician looked upon the death of the children as a natural consequence of the mother's condition and inevitable.

In her last confinement she was attended by another physician who appreciated the conditions under which the child was being brought into the world and understood the necessity of protecting it from the shock incident to the abrupt withdrawal of the opiate. In order to do this he gave paregoric in ten-drop doses, and these were repeated at such intervals as was found necessary to keep the child comfortable and free from abstenance symptoms. The child was not allowed to nurse, but the paregoric was kept up for a few months and then gradually discontinued. The child is now a stout, healthy boy of 13 years, and the mother is firm in her belief that had the same course been pursued with her other children they would have lived also. They were all well developed and apparently normal children and showed no signs of illness or discomfort during the first twelve hours after birth, but from that time on their illness grew rapidly and they either went into complete collapse or died in convulsions by the end of the third day after birth.

A case which I now have under treatment gives a history which in some particulars is very similar to the above, while in others it differs greatly. This woman, Mrs. C. J. D., has been using morphine by the mouth forty-five years; during most of that time has taken with regularity 20 grains of morphine per day. She was married in 1863, first child in 1864, premature, at sixth month of pregnancy. A second pregnancy soon followed, which resulted in miscarriage at third month. The third pregnancy occurred in 1866. Miscarriage was threatened at second month and morphine was administered to preserve the conception. This was used occasionally to relieve symptoms for the first few months, but before gestation was completed the drug had been used daily for more than three months, by which time the morphine addiction was established, and she was carried to full term and delivered of a normal child. The mother says that either from intuition or upon the advice of the midwife who attended her, paregoric was administered to the child when it became fretful and this was kept up for several months before it was entirely discontinued. The child lived to be a grown woman.

After the mother's recovery from this con-

finement an effort was made to discontinue the use of the morphine, but without success, and its use has been continued from that time until now. As she did not allow this child to nurse, another pregnancy occurred within a year and this was followed by others in rapid succession until eleven children had been born to this morphine-using mother. She went to full term with all of them, and none of the children died in infancy; six of them are now living, and none of them show peculiarities which could be attributed to the condition of the mother at the time of their birth.

The same course was pursued in the case of the last ten children as in that of the first one that lived. An opiate was administered to them on the day following their birth, usually about twelve hours after birth. The mother says that at that time they began to be fretful and to show signs of discomfort, and as she understood what these symptoms meant she administered an opiate, and this was repeated at such intervals as was found necessary, and after the babies were a few months old, the opiate was discontinued by gradual reduction, and this was usually done without very much difficulty. None of the children was allowed to nurse.

One unique feature of this case is that no menstrual flow has occurred since the third pregnancy, the ten conceptions following that having occurred without the appearance of menstruation at all. As a rule the habitual use of opiates arrests menstruation, but from these cases it is quite evident that it does not always arrest ovulation, if indeed it does so at all. This woman passed the menopause without knowing when it occurred.

REPORT OF TWO CASES OF FOREIGN BODY IN THE RIGHT BRONCHUS REMOVED BY SUPERIOR BRONCHOSCOPY.

By C. A. THIGPEN, M.D.,
Montgomery, Ala.

Case I—Male, white; aged 13 months. Was brought to me on October 1, 1911, by Dr. W. S. Smar, of Clayton, Alabama, with the history, "that while playing on the ground he was suddenly seized with a severe paroxysm of coughing, accompanied by difficulty in respiration and cyanosis." The doctor was immediately summoned, and, from the symptoms, suspected a foreign body in the trachea; and as there were peanuts on the ground where the child was playing he naturally surmised that he had inspired a peanut. The symptoms improved, however, except at times when he would have a recurrence of his coughing and wheezing respiration. This continued for two days, when he brought the case to me. Examination of the chest showed a partial suppression of the respiratory sounds in the right lung; and in the left deep sonorous respiration. The general condition of the child was good; and aside from the slight disturbance in the breathing, and a temperature of 102 degrees F., he appeared perfectly well. It was decided to have a radiograph made, which was done in a most satisfactory manner by Dr. G. J. Greil of Montgomery. This disclosed the fact that the child had a nail about two inches long, head downward, in the right bronchus. Bronchoscopy was at once decided upon, which was done under chloroform anaesthesia. A Killian tube was introduced through the larnyx and trachea as far as the bifurcation, when the point of the nail could be easily seen extending from the bifurcation of the trachea into the right bronchus.

An attempt was made to remove it with the ordinary straight forceps, but as it was firmly fixed in the brounchus it would invariably slip. The Von Eiken right angular forceps

was substituted, and by gently pulling and pushing in the axis of the right bronchus the nail was freed from its bed, and easily removed. The child reacted readily from the operation, and left the hospital well on the fourth day.

Case II—Female, white; aged 5 years. Was brought by Dr. Ham of Elba, Ala., October 4, 1911, with the history, "that ten lays before, while playing with a grain of corn it was suddenly drawn into the throat, when she lost her breath and coughed incessantly, and has had bad breathing and fever ever since." Auscultation and percussion indicating bronchopneumonia over a small area in the right lung; in the left the respiratory sounds were much exaggerated. The radiograph showed nothing, but as we were sure, from the history and the symptoms, that there was a foreign body, a superior bronchoscopy was made under chloroform anaesthesia. A Killian tube was introduced through the larynx and trachea, and as the bifurcation came in view it was tilted toward the right bronchus, when a grain of corn could be easily seen with the apex or small end looking toward the tube. After several unsuccessful attempts it was finally caught by the forceps and brought up into the tube; but on account of the end of the grain being soft, the forceps mashed through it, and it escaped. It remained in the tube, however, moving in and out with inspiration and expiration. It was impossible to grasp it again with forceps, and after several unsucceful efforts the blunt hook of Killian was passed beyond the lower border of the grain, which was firmly fixed against the wall of the tube, which was suddenly withdrawn, bringing the corn with it. The child did not stand the anaesthetic well, which had to be discontinued, and cocaine and adrenalin used;

and on account of the excessive muco-purulent exudation the hand pump of Killian was in constant us, and the operation could not have been done without it. The patient next day she was allowed to return home in the care of her physician, since which time she has steadily improved, and the broncho-pneumonia occasioned by the ten days' so-

breathed badly for several hours after the operation; but she was so much improved the journ of the foreign body in the bronchus has disappeared.

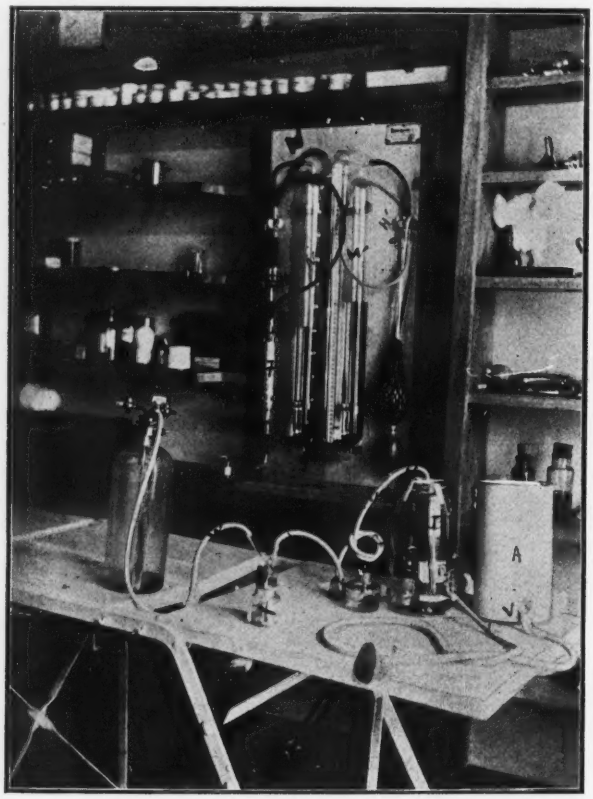
THE TECHNIC FOR COMPRESSION OF THE LUNG IN PULMONARY TUBERCULOSIS.

By MARY E. LAPHAM, M.D.,
Highlands Camp Sanatorium,
Highlands, N. C.

In advanced cases of pulmonary tuberculosis the ulcerating surfaces, the abscesses and cavities demand the removal of the foul, decomposing masses as imperatively as in any other part of the body. Where else would we content ourselves with medical measures hopelessly inadequate? We can remove the foul material, prevent its recurrence, render the lung clean and dry, and induce an overgrowth of connective tissue that will convert the tubercular lesions into healthy, durable scar tissue by a method simple enough to permit its use with little or no surgical training. If we can compress the lung sufficiently to sup-

press the circulation, tubercular processes will be obliterated, and we can do this by filling the pleural cavity with a gas, usually nitrogen, until sufficient pressure is obtained to shut off the pulmonary circulation.

To compress a tubercular lung we must first produce a pleural cavity, then create enough pressure to crowd the lung up into the smallest possible space, and then hold it there until cicatrization is complete and it is safe to allow the lung to re-expand and resume its function.



The nitrogen-producing apparatus consists of the water reservoir A, open at the top, and containing water, connecting freely by means of rubber pipe V with bottle B, and continues with metal tube E, which passes through the air-tight cork belonging to bottle B. This metal tube is of sufficient length to reach near the bottom of bottle B when the cork is tightly inserted in it. This metal tube carries a float which is freely movable up and down on the tube. The float is of such shape and construction as to form a reservoir for grain alcohol, and to float on water when water is introduced into the bottle B, and of sufficient size so that it can be introduced into the bottle. The cork belonging to bottle B also carries the metal tube G, which merely penetrates through it a short distance. The metal tube G is continuous to the small bottle X. It has a coil of several folds at C, and an air-tight cut-off at l. This tube G is continuous through the cork of the small bottle X for a sufficient distance to reach near the bottom when the cork is tightly inserted in the same. The bottle X

contains a solution of potassum hydroxide, filling it about one-half, and also contains solid sticks of the same. The cork belonging to the small bottle X carries a tube W, or a connection for the same which just passes through it. This tube W is used for the purpose of drawing off the nitrogen into some injecting apparatus, as Y. The coil in metal tube G is for the purpose of sterilizing the gas as it passes through it, it being heated in some manner, as by alcohol lamp O.

When wishing to produce nitrogen, the reservoir A is filled with water, the bottle B is empty, the alcohol lamp O is lit and placed under the coil, and the cut-off L is turned. We now remove the cork from bottle B sufficiently to raise the float R to its mouth; grain alcohol is poured in the float and lit, and the cork immediately inserted tightly into the bottle. As air is approximately composed of 20 per cent oxygen and 80 per cent nitrogen, we have, as a result of the combustion, grain alcohol in air, nitrogen, carbon dioxide and water. When this is done in bottle B it is possible that at first the heat causes the air in the bottle to expand and some of it be forced out through the free tube V and E into the reservoir A, where it will bubble up through the water. As the oxygen is consumed and the heat subsides, water will be drawn from the reservoir A through the tube V and E into the bottle B. We now connect up the tube W with some injecting apparatus, raise the reservoir A, turn the cock 1; the gaseous mixture in bottle B is forced out by the inflowing water into the tube G, where it is sterilized when passing through the coil C on into the bottle X. In passing through the bottle X, carbon dioxide and water are both absorbed by the potassium hydroxide, and as a result we have nitrogen sterilized and practically chemically pure. With this apparatus it takes but a few minutes to produce any desired quantity of nitrogen. The apparatus is inexpensive, both in its construction and operation, and quite simple to use.

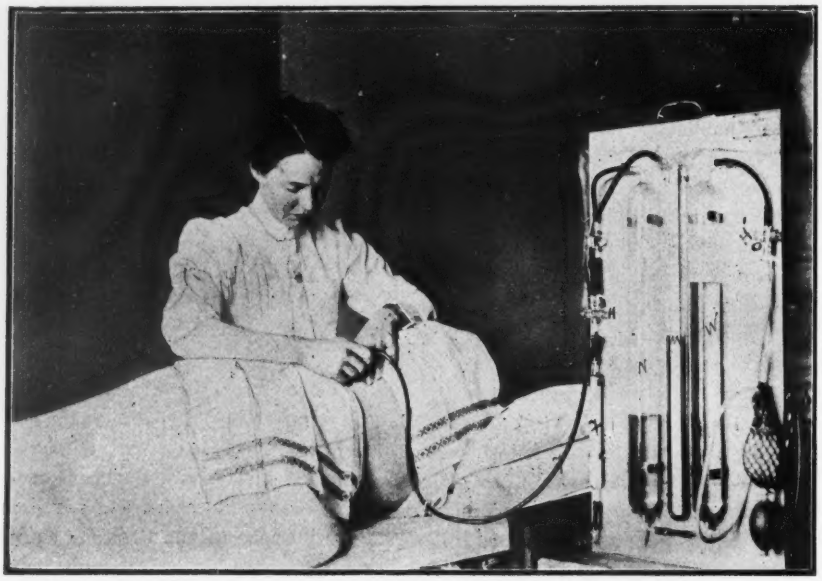
This ingenious apparatus was invented by Dr. Stevens T. Harris, formerly of Valdosta, Ga., now with the Highlands Camp Sanatorium, Highlands, N. C.

For injecting the nitrogen into the pleural cavity we use an apparatus devised by Forlanini of Pavia and modified by Saugman of Denmark and Von Muralt of Davos. The cylinder on the left (N) contains nitrogen, and is graduated to show the amount of nitrogen used; (W) contains water for affording back pressure upon the nitrogen and measuring the quantity used.

The nitrogen jar is first filled with water from (W) until all the air is expelled; then the cylinder is filled through the filter (F), packed with sublimated cotton, the two-way stop-cock (H) being turned so as to allow the passage of the nitrogen from the filter into (N); the stop-cock (H) is turned so as to permit air to escape through the opening (O), and as the nitrogen enters (N) the water is driven back into (W). The tube (T) conveys the nitrogen to the pleural cavity, and a hard rubber socket is fitted into the end so as to make an air-tight connection with the head of the needle. When the needle has been inserted and is ready for the nitrogen, the socket is firmly inserted into the head of the needle, and the stop-cock (H) turned so as to connect the pleural cavity with the manometer (M); the manometer is graduated in centimeters so that each space means that one c.c. of water has been raised or lowered one cm. by the pressure in the pleural cavity. The spaces on the left above the line (M) represent so much negative pressure; those below (M) represent positive pressure. On the right, all below (M) is negative, and all above (M) is positive pressure. Inspiration normally lowers and expiration raises pressure; when the respiratory excursions are satisfactory turn the stop-cock (H) so that the nitrogen can pass from (N) into the pleural cavity, and turn (H′) so that air can enter (W) and the weight of the column of water in (W) will

help the entrance of the nitrogen into the pleural cavity. When the columns of water are at nearly the same height turn the stopcock (H′) and use the double bulb on the right.

Preliminary Precautions.—The bowels and stomach should be empty. If the patient is nervous and apprehensive give an injection of morphine and atropine. The nitrogen must not be cold. There should be capable assistance. Have ready at hand hot water bags, oxygen, adrenaline, diagalen, whisky, strong ammonia for inhaling, strychnine, atropine, nitroglycerine, and camphorated oil. Caution the patient emphatically against the danger of a sudden movement which might break the needle.



For the production of the pleural cavity choose a spot over the best resonance and breath sounds, avoiding the thicker muscles, the heart and the diaphragm, and preferring a wide intercostal space. Have the patient lie so that the point of puncture comes uppermost; paint the perfectly dry skin with tincture of iodine; press hard upon the spot to be punctured for a few seconds in order to get a depression whose deepest portion is exactly in the center of the intercostal space; mark this central depression and anaesthetize with ethyl chloride; stretch the skin tightly with two fingers placed on the ribs, and thrust the fine hypodermoclysis needle slowly and steadily through until the pleura is felt to yield; this should cause no more pain than a hypodermic injection; remove the wire from the needle and connect with the manometer; if there is a negative pressure and good respiratory excursions, there is a free pleural cavity and the nitrogen may be turned on; if there is no negative pressure and no respiratory excursions, the needle is either stopped or is not in the pleural cavity.

Clear the needle by probing; aspirate to see if it contains blood, and if air can be drawn through; if so, and the manometer does not show excursions, it is possible that pleural adhesions prevent the expansion of the chest from influencing the pleural cavity so as to produce respiratory excursions. It is possible to produce expiratory excursions upon the

manometer by separating the pleuræ with a little nitrogen until the effect of expansion is felt; when the needle responds freely to aspiration and there is no marked backward suction it is a great temptation to cautiously introduce a little nitrogen and see if the manometer will not respond. This is a dangerous experiment, for without the aid of the manometer we do not know where the point of the needle is; it may be in the endothoracic fascia, or in a pleural band, or in the lung; if in the endothoracic fascia or a pleural band, there may be a slight movement of the manometer, but aspiration shows strong back suction; when in the lung or abdominal cavity there are slight respiratory excursions and no back suction, and the nitrogen flows freely; if in the lung there is apt to be coughing and bloody sputum.

If the nitrogen is turned on we may have a subcutaneous, a deep, or an interstitial emphysema, or gas embolism. If the needle is in the lung and is moved enough to tear the lung tissues a fatal abscess may be formed. Because of the absence of back suction, and of blood in the needle, we have occasionally been confident that the point of the needle was in the pleural cavity although the manometer was negative. We have at these times cautiously allowed 25 c.c. of nitrogen to flow in and then found that there were slight respiratory excursions, although the pressure was null; slowly admitting more nitrogen we have developed good respiratory excursions with a pressure of null, or with the development of a good negative pressure, sometimes greater in proportion to the amount of nitrogen admitted. If after 100 c.c. there is no change in the manometer it is better to make a new attempt.

After the nitrogen is turned on, register the pressure after each 100 c.c.; if it rises very rapidly there is probably a pocket formed by adhesions. A sudden fall in pressure and a sharp pain probably means the breaking up of adhesions. In producing a pleural cavity we are chiefly anxious to put in enough nitrogen to keep the pleural surfaces well separated until the next filling is made, usually the next day or the day after. In most cases 500 c.c. of nitrogen should be enough, and often less will do. It is not safe to go on putting in nitrogen until the patient complains of discomfort, because it may be some time before the effects of the pressure are fully felt. Too much pressure may cause severe pain, excessive, paroxysmal coughing, inability to sleep or eat, or to get into a comfortable position, high temperature, and rapid pulse.

A pressure of null or one cm. is often enough; it is not necessary to raise the pressure at the first attempt. When enough nitrogen has been admitted hold the skin close to the needle firmly with the left hand, withdraw the needle quickly, and seal with collodion.

If the pleural cavity has been well preserved the after fillings are easily made unless the neoplastic condition of the pleural vessels causes the needle to fill with blood at each introduction; the needle may simply be stopped or the blood may well up through the needle and flow out on the skin. The attempt may have to be postponed if the pleura becomes irritated and causes violent coughing; coughing is always bad on account of the danger of breaking the needle. If the manometer does not show good excursions, either the pleural cavity has been lost or the needle is stopped. Have the patient count or draw a long breath to see if the manometer will be affected. If not, and there is no back suction on aspirating, a few c.c. may be admitted, but at a great risk because we are ignorant of the whereabouts of the point. It is always a temptation to see if the nitrogen will flow, but gas embolism has been caused in just such cases, and fatal results have followed. The only safe way is never to turn on the nitrogen until the manometer shows good excursions.

The amount of nitrogen to be given in the after fillings depends upon the patient's ability to stand the pressure. A priori it would seem

that at first the pressure would be more felt than later on after the systems had adapted themselves to it. The contrary is nearer the truth, for the effects of pressure are often felt more and more strongly as the weeks go by. The heart and the digestion and the nervous system may be equal to the strain for some weeks and then demand relief, and the pressure have to be lowered. The second lung may bear the increased functional strain without showing any rales for some time, and then break down. If there is tuberculosis of the intestines it is nearly always aggravated by the pressure. The complete compression of the lung without any relaxation is ideally obtained by putting in as much nitrogen as the patient can bear without being conscious of the process, and repeating the injection often enough to promptly replace any pressure lost by absorption, or by shrinkage of the lung. As the lung becomes well compressed its shrinkage causes less loss of pressure, so that only the loss of nitrogen due to absorption has to be replaced. If the readings of the manometer are kept like a temperature curve, one soon can manage to preserve an even height of pressure if the patient is equal to it. If not, then the height must come down. The problem is to absolutely prevent the slightest expansion of the lung without using more pressure than the patient can bear.

The amount of compression of the lung is estimated by percussion, auscultation and the X-ray. Percussion shows the area of tympany and the coin test is usually well marked, but not always. At first the rales disappear, then the breath sounds disappear, or are only heard over the compressed lung. When the lung is well compressed the breath sounds become very metallic, or there is a metallic clinking, or the sound as of a drop falling into an empty space.

If the lung is held out by adhesions, rales and altered breath sounds may be heard over the non-compressed part. When adhesions prevent the perfect compression of the lung, persistent efforts may finally triumph. For the first few months we keep our patients very quiet and do not allow much exercise; we are afraid of the effect of the increased functional demands upon the second lung. Some cases are not allowed to walk; others sit up for a part of the day, and others are kept in bed. The effect of menstruation is to fill up the pleural vessels and increase the difficulties, so we avoid giving fillings during menstruation.

It is not definitely known how long the lung has to be compressed before it is safe to allow it to expand. Common opinion says for a year at least. Murphy and Lemke (1) obtained good results with three or four fillings. Forlanini showed the unfortunate results of allowing the lung to re-expand too soon (2). In one of our cases the patient refused to go on with the fillings after five months. This was an advanced case with the left lung riddled with destructive foci, and with rales and altered breath sounds in the right apex. There was a history of eighteen months' rest in bed and repeated hemorrhages, and temperature. Today there is vesicular breathing over all the left lung save over a small area up under the spine, and the patient is well. Another case was that of a deep, central lesion, and fever for over eight months. After five months of compression we allowed the lung to re-expand, and the patient has made a good recovery. We consider a year to be about the right amount of time to keep the lung compressed.

The difficulties and dangers of the method are in direct proportion to the extent of the pleural adhesions. If the pleural surfaces are free the compression of the lung is child's play. If there are adhesions and the pleural surfaces are not sufficiently separated the needle may go on into the lung, and if it enters infected tissues may cause an empyema upon its withdrawal, or a fistula in the track of entry. An abscess may be formed in the lung if the needle tears the tissues, therefore the needle should always be held as still as possible, so as not to injure the lung or scratch the pleural

surfaces. If the needle does not pierce the costal pleura, but stops in the endothoracic fascia, a subpleural emphysema results when the nitrogen is turned on, which may extend down the arm or a considerable distance in any direction. If too much nitrogen is injected and there is too much pressure in the pleural cavity the nitrogen may leak back through the track of entry, and diffuse all through the subcutaneous tissues, causing crackling crepitations that are easily felt. If the pleura yields the nitrogen may escape, forming deep emphysemas that fill up the throat, interfere with swallowing, and cause much alarm and distress. The nitrogen may not escape, but may cause the pleura to bulge far over on the other side, impeding the action of the other lung and making respiration difficult. The heart may be greatly misplaced and its proper action greatly interfered with.

Pleural reflexes are liberated simply by touching the pleura without its being punc tured, and syncope has occurred before the needle had entered the skin. In markedly hysterical cases it may be best to go through the skin or the pleura without injecting any nitrogen, and in others it may be best not even to go through the skin. Pleural reflexes are a source of great terror to the patient, and are apparently due to the puncturing of the pleura. Brauer (3) reports a case of spasm of the glottis when the surface of the pleura was touched, before being punctured by the needle, and this spasm came on each time the pleura was touched unless it was previously sponged with cocaine. Aphonia, paralysis of coughing, dyspnœa, dysphagia, cardiac failure, respiratory failure, loss of vision and syncope have all occurred. After a pleural reflex has been aroused it is well to give a preliminary injection of morphine and atropine before making the next attempt.

Pleural effusions have occurred in varying percentages, from 38 per cent to 40 per cent; infection of the effusion has caused death very rarely. Usually the effusion has a very marked effect upon absorption, so that the pressure remains very uniform, and does not have to be sustained by as frequent fillings. It usually causes no disturbance, but in a few cases has had to be withdrawn. Two needles are inserted, one in the effusion for withdrawing it, and the other above; as the fluid is drawn off from below it is replaced by nitrogen from above, so as to maintain an even pressure.

The greatest danger in the use of the method comes from embolisms. These are of two kinds—gas embolism caused by the entrance of air or nitrogen into the circulation; and emboli from the expulsion of a clot from the pleural circulation or the pulmonary. If a vessel in the lung is torn by the needle air may be sucked in from the lung and death may occur before any nitrogen has been turned on. Theoretically the same is true of the pleural vessels. Direct injection of nitrogen into the circulation is improbable if the manometer shows good excursions and aspiration has been properly performed. The expulsion of a clot from the pulmonary circulation may occur at any time during any filling; it has happened as late as the twentieth filling, but, so far as I know, never during the production of the pleural cavity. The results of embolism are appalling. The patient says, "I feel queer; I cannot see;" then loss of consciousness, instantaneous failure of respiration and circulation, extension, convulsions, trismus, etc. Strong ammonia inhaled, whisky and oxygen are the best restoratives.

Too much pressure has caused heart failure and death.

The great advantage of the method is its certainty. If there is no complication and the method can be used there is no doubt as to the results. If the lung can be compressed and kept so for a sufficient length of time, not only is recovery bound to follow, but also the functional activity of the lung will be restored. Here is a business man worth a large salary, and all of his left lung is involved. He spends two or three years getting well and runs the risk of failure at the end, or of reduced earning capacity. If he recovers the lung

contains dangerous possibilities of a relapse at any time. When the tubercular masses are all driven out, and instead of encapsulated masses we have a perfectly clean, anatomical recovery, there is nothing to occasion a relapse. If the lung can be compressed the man will be safely back at work in a year.

This method is the only known way to save life in hopeless cases. Over 400 cases have been reported; all of these cases were advanced and hopeless, and the recoveries were over 40 per cent. It is too soon as yet to speak of recoveries in our work, but we have had 24 cases treated by this method and the process has been arrested in 19.

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ON THE END RESULT OF OPERATION IN GRAVES' DISEASE

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I have recently investigated the results of operations on cases of Graves' disease.

This subject at once divides itself into two classes, viz: the immediate effect and the remote. A study of the immediate effect is of special interest when considered with reference to certain points, viz: the condition of the patient at the time of operation, the type of operation performed, the method of operation, the pathology of the gland and the clinical chart in relation to the severity of the disease and the ultimate prognosis.

When, a number of years ago, I resolved to make a study of Graves' disease, I began with the theory of Kocher, that the value of surgical operations in Graves' disease depended upon the existence of a harmful hypersecretion of the thyroid. On that basis one argued that any case of Graves' disease would be benefited if the gland secretion could be diminished, hence the more severe the disease the stronger the indication for operation. There was at first but little opportunity to observe any but those cases already in their last stages—cases with widespread degenerations of most of the body, especially of the heart, brain and liver. These included patients emaciated to a skin and bone outline of their former selves; those whose hearts spread out flabbily, occupying much of the thorax; those with widespread edema; those with high fevers; those delirous and who had to be restrained in bed, and those with partial dementia. These certainly were desperate risks—but I argued that if hypersecretion is the primary and the essential cause of the disease there was as sound a reason for thyroidectomy as for the excision of an inflamed appendix. It is scarcely necessary to relate the actual experiences that followed operations for lobectomy in these serious cases by the older methods of ether anesthesia, operating room strain and without local "blocking." The mortality was, of course, high as shown in Marine's report in the Archives of Medicine. The surgical risk in these advanced cases made Kocher's suggestion to ligate a single vessel, then another, then perhaps a lobe, a useful one. But the operation by progression, though an improvement on the more radical lobectomy, still had its toll in the severest cases. This led me to the next step, viz: a study of the factors of danger in the operation. This could be done only by clinical experience. At first

I thought that ether anesthesia was an unfavorable factor, and I tried local anesthesia, but again I found that in the severe cases the same furious reactions followed operation. Experiencing two deaths from fear of the operation alone, and noting the many examples of the havoc of fear cases under medical care, the psychic factor was next studied. This factor proved to be important. Again experience taught me that although the exclusion of the psychic factor markedly diminished the risk, some cases still ran a stormy post-operative course, and the occasional case succumbed. About this time my new hypothesis, first stated in the Ether Day Address, 1910, apparently cleared the mystery of the post-operative explosion and led to the operation by anoci-association. Even after this principle was established I was confronted by a rather puzzling fact, viz: that although a lobe might be excised even in severe cases, without changing the pulse, and although the furious post-operative pneumonia could be almost wholly avoided, I was disappointed to find that a patient could not withstand the metabolic strain of a sudden diminution of the thyroid secretion beyond a certain point; that is to say, if one could "wish out" a lobe his patient might die a metabolic death—a death unlike that of the explosive post-operative course following the usual technique. This led to the last and present status, viz: that if the principles of anoci-association are perfectly carried out there will be no deaths from so-called hyperthyroidism, but there will still be metabolic death if too much thyroid secretion is suddenly withdrawn. From the first up to the present time I operated on every patient that presented itself, on the ground that medical treatment being futile, there was left no hope but surgery, and there being little or nothing to lose, and much to gain, I tested to the fullest extent the surgical possibilities. The results will be later discussed.

The next point of interest is that of the relation of the pathologic findings and the clinical symptoms. During this period of development of the surgical problem the clinical records of the cases in the Lakes de Hospital, and the pathologic specimens were placed at the disposal of Dr. Marine for his personal investigation.

On the thyroids excised Dr. Marine made iodine determinations, and histologic studies. From these studies several interesting deductions can now be made, viz: that the morphologic findings and the iodin content are but relative indices as to the severity of the clinical symptoms, and are of less value in making a prognosis or a classification than are the clinical signs. Another point of interest is this: The iodin content being diminished in the glands in Graves' disease, Marine drew the deduction that in Graves' disease there is a hypothyroidism and not a hyperthyroidism. Then, too, Marine concluded on the study of my material that the operative risk, as well as the clinical end result, could be predicted with confidence from the laboratory findings, but actual experience has shown that the clinical picture is a far more reliable index. These points will be further discussed.

As to the relation of the laboratory findings and the surgical risk, our actual results show that serious cases that succumbed to surgical operation in the early series are now saved. A laboratory prognosis of several years ago is obsolete today. Hence, any prognosis as to immediate results is based on the shifting sands of surgical prognosis. Now the inference which Marine draws from the diminished iodin content is opposite to ours. Marine holds that diminished iodin content indicates a hypothyroidism, hence a surgical operation could not be a benefit. Granted that the iodothyrine is the principal active substance secreted by the thyroid, and that it is diminished in Graves' disease, it must be remembered that the gland is enormously vascularized, hence its activity is greatly increased. A further significance of this increased vascularity is seen when coupled with the probability as shown by Beebe that the iodin circulates between the rest of the body and the thyroid

in a manner analogous to the circulation of the bile salts between the intestines and the liver. The iodin probably forms a compound in the thyroid, and is carried in combination to some other part of the body, and broken down in the course of its function, and then is returned again to the thyroid. A given amount of iodin under those conditions might perform many times the function of the iodin held in storage in the quiescent colloid gland. This inactive stored iodin is by the laboratory methods compared in work value to the active iodin in Graves' disease. This is equal to saying that the loafer does as much work as the man on his job. Beebe tells me that he has never found the gland of any case of Graves' disease without some iodin, and it is probable that there are other active substances in the thyroid gland besides the iodin compound. In Graves' disease it is well known that the body reacts abnormally to thyroid extract and to iodin, hence a small amount of iodin under these circumstances is equal in effect to a much larger amount in normal conditions. Even small doses of iodin or thyroid extract may cause death in precisely the type of death of the advanced cases referred to before. Now it is, of course, an axiom that when laboratory findings run counter to clinical phenomena the laboratory must readjust itself.

The last point of interest relating to the phenomena observed in the hospital is the inadequate index the clinical charts are to the actual condition of the patient. In some cases a study of the clinical chart is as far removed from indicating the patient's condition as the temperature and pulse indicate the state of the patient in cirrhosis of the liver, or in diabetes. The immediate risk depends on the technique employed and the amount of thyroid tissue thrown out of function. If the thyroid was in a state of hypothyroidism, and if iodothyrine were the only active substances in the gland, then the removal of the gland would cause neither benefit nor injury, and the administration of thyroid extract of iodin should prove an advantage. From an abundance of clinical experience we now know that the administration of iodin is of little or no benefit in cases of Graves' disease, unless the stage of myxedema has been reached.

As previously stated in the early cases of my series composed almost wholly of desperate risks, operated by methods then in vogue, the immediate mortality was high. The surgical situation was similar to that of the earlier stage of surgical treatment of appendicitis. It was not appendicitis that the surgeon was confronted with; it was general peritonitis, bacteriemia and the late stage of sepsis. Unless an appendicitis had reached an apparently hopeless stage it was not considered to be ready for the surgeon. But these desperate cases of acute appendicitis taught us the art and gave use the principles by which appendicitis has been mastered. So, too, in Graves' disease, it was too frequently the human derelict we were asked to deal with. But the hard experiences here have given us methods and principles by which we will as surely solve this problem as the problem of appendicitis was solved.

Since conducting operation on the new principle of anoci-association, and recognizing the importance of Kocher's progressive elimination of glandular activity, the mortality has all but disappeared, excepting in those that are potentially dead at the time of operation. Recent statistics of all cases will amount to about two deaths in one hundred.

Then why operate on these desperate risks? Because I have seen the delirious, the edematous, even the demented, recover—not from the operation alone, but the course of the disease arrested.

Now as to the end results: What may a patient reasonably expect from an operation? It depends upon whether the fire was extinguished when it began and whether the roof and the walls have crumbled, and it depends on whether or not the torch is to be reapplied to the parts remaining. When the disease is of long standing in patients of poor physical

structure, and whose financial and social circumstances permit of no mitigation of the strain of life during the time of convalescence, the results are correspondingly impaired.

I know of no way of stating the precise results of operations in this disease—this protean disease of body-wide changes. If one were to state the effect of over-physical training; of a mental breakdown of the over-ambitious student; the effect of nervous prostration of the overworked and worried business man, or if asked to state scientifically the end result of an overwhelming grief, how could it be done? Studying the end results of my patients, I may make several generalizations. No patient died of the disease after leaving the hospital; one patient was made worse by the operation; otherwise every patient was either benefited or cured.

Among the factors that influenced the end results were the environment of the patient, the freedom from nervous shocks, the means at hand for diversion, as well as the avoidance of strain and the elimination of all nervous shock at the time of operation.

The improvement began usually the next day after the operation, and continued for from six months to two years.

I regard patients as cured when they are able to withstand nervous shocks, such as fright, disappointment, worry, grief in a normal manner. I have found that the time required for a complete cure is dependent upon the environment of the patients. Automobiling, travel, yachting, nature-study, happier turn in the tide of life, are the ideals that facilitate the cure. I know of no class of patients who are so intensely grateful, who become such militant partisan advocates of the operative treatment of this disease as the cured cases. There may be hesitation on the part of practitioners to recommend surgical treatment for Graves' disease, but the cured patients share no such doubt. They are stronger advocates of operation than the most surgical surgeon. I may say in conclusion that the immediate operative risk is approching that of operations for acute appendicitis; that all operative recoveries are either improved or cured; that the extent of the cure depends largely on the environment and medical direction during the year following the operation. I know of no other class of patients whose relief is so deeply fundamental as that of these patients tortured by an ever-present pathologic emotional state.

SURGERY OF THE INTESTINES, WITH THE REPORT OF 17 CASES WITH RECOVERY

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In discussing the surgery of the intestines and presenting these fifteen cases of recoveries after operation, there is no desire to produce the impression that my record of recoveries after this very grave surgical operation is better than that of average surgeons, for it is not, and I could report almost as many deaths; but we often desire to forget the hard-fought battles that resulted in defeat, remembering only those in which victory was won, leaving us stronger for the next desperate case thrust upon us. I say thrust upon us, for I do not think that any surgeon would look up these desperate cases in order to win a reputation. If I desired to rid the field of some capable and rising young surgeon, I would select no better plan than to see that his first dozen cases were surgery of the intestines, preferably volvuli with gangrenous gut, and gunshots of the abdomen.

These cases are usually brought into the hospital in a very desperate condition. Ordinarily, more than three days have elapsed since the beginning of symptoms of obstruction in cases of volvuli, and more than eight hours after gunshot wounds of the intestines. We then have to deal with the mechanical condition and the progressive symptoms, which are shock and peritonitis. The gunshot patient, nine times out of every ten, is an alcoholic and a poor subject for an anaesthetic.

Treatment.—Upon the entrance into the hospital in the cases of gunshot wounds of the abdomen, in which we feel sure that the hemorrhage had ceased, and those cases in which we have grave symptoms of shock and peritonitis, we have found nothing better to combat these symptoms than normal saline, given by hypodermoclysis, usually in connection with solution of adrenalin chloride ½ dr. This will raise blood pressure and furnish fluids to the starving tissues, for in the majority of these cases no fluids have been retained by mouth for many hours and sometimes days. After the patient has been put in as favorable condition for an operation as possible, our next consideration is the anaesthetic to be used. We wish to choose the least harmful one, as these patients are in bad condition. In many the hemoglobin is below 60, and the majority suffer from acute nephritis, due to overwork of the kidneys in their effort to rid the system of the poisonous products in the blood due to foreign bodies and degenerative tissues in the abdominal cavity. No anaesthesia fulfills these many requirements as does gas and oxygen. It is non-irritating to the several organs of the body; is never followed by nephritis or other post-operative complications.

[1]Dr. Graham, of Chicago, has proven that ether affects phagocytosis and lowers the resistance of a patient to infection and shock.

[2]Dr. Crile, of Cleveland, says: "There is no post-anaesthetic effect upon either the lungs or kidneys, nor, indeed, upon any other part of the body; therefore, in infections, since using nitrous oxide and oxygen, as contrasted with ether, we are equally certain that ether, as compared with nitrous oxide, impairs the immunity of the patient. The difference is so striking that only a great emergency would induce us to use ether instead of nitrous oxide. There is unmistakably a great diminution in surgical shock."

[3]Hamburger and Ewing, in a series of clinical and experimental observations, find in nitrous oxide anaesthesia:

(*a*) The hemoglobin is not permanently reduced nor is anemia produced.
(*b*) Hemolysis is not induced.
(*c*) The changes in the reading of the hemoglobin and the erythrocytes are transient and of no surgical significance.

The blood changes incident to ether are:

(*a*) The hemoglobin is slightly reduced, and therefore a slight anemia produced.
(*b*) Hemolysis is not materially increased.

In chloroform:

(*a*) Hemoglobin is reduced, therefore anemia is produced.
(*b*) Hemolysis is increased.

One could quote the findings of many leading surgeons and their staffs who have studied this important subject, and all will agree that no anaesthesia can be compared to gas and oxygen when the proposition of life and death hangs on a narrow margin. When this anaesthesia was first introduced into the surgical work in this city by Dr. James R. Dawson and myself several years ago, we were open to much criticism, but we both note with pride that many surgeons are now using it. It does not require a trained mind to appreciate the great advantage of gas oxygen anaesthesia over ether. I think that the anaesthetic is one of the most important steps in the technique in grave cases of intestinal surgery.

The preparation of the abdomen is of importance, as we can, by our old method of soap and water and much scrubbing, increase very materially the shock of our patient. Shaving the abdomen dry with a sharp razor, rubbing it with ether to dissolve the fats, and then ap-

1. Am. Med. Assn. Journal, Mar. 26, 1910.
2. Southern Med. Journal, Jan., 1910, pp. 20-24.
3. Am. Med. Assn. Journal, Vol. LI, p. 1586.

plying tincture of iodine can be done quickly and with good results. Many excellent authorities could be quoted in support of this method, but I will only mention that it is used by Murphy, Keene, Stone and many others. I have used this method in a little less than 2,000 cases, and the results fully justify its continuation.

After making a free incision into the abdomen, if the case be a gunshot wound, we often find the abdominal cavity partly filled with blood clots. After their removal, the pressure being relieved, hemorrhage often begins again quite freely. The bleeding points are sought and hemorrhage controlled, after which perforations are looked for.

When we have from four to six perforations in a short piece of gut, a resection is often advisable, as we can better do our sewing in gut that has not been bruised or infected by contact with a blunt or infected bullet. Where a resection is necessary, in the large majority of cases, of course, the silk suture is preferable, but in exceptional cases the Murphy button is quite useful. When the resection is done for obstruction, in which we find the intestines badly distended with gases, these should always be emptied before the anastomosis is made. In this way many cases of post-operative ileus, so often seen in intestinal work, will be avoided. One might digress and state that the usual cause of post-operative ileus in abdominal surgery, with marked distention of the abdomen, is from improper purgation before operation. But in emergency cases purgation is impossible.

In the large majority of these cases drainage is necessary. Through and through silk-worm-gut sutures are used, as this is always advisable in drainage cases, and it also requires less time in which to close up the abdomen.

A very tight abdominal binder will make the patient more comfortable, cause an increase in intra-abdominal pressure, and is an aid in the relief of shock.

Post-Operative Treatment.—If the patient's condition will permit, the head of the bed should at once be elevated. Proper warmth and stimulation should be used. If the colon is not injured, saline enemas every two hours or the Murphy drip should be given. Morphine should be used freely, as it will rest the bowel and permit prompt union in the divided gut. It will also prevent peristaltic distribution of the infection. No attempt should be made to move the bowels until the fourth to sixth day, as early purgation and soap enemas are often the cause of our fatalities. I do not think I ever heard of a death from constipation, so we need not fear a few days' constipation after intestinal surgery. The older surgeons would always say they felt "so much better after the bowels had moved," and directed all efforts in this direction. By the fourth to the sixth day the bowels will usually move from a saline enema; if not, then a small soapsuds enema is indicated. Purgatives should be withheld for ten days.

Feeding should be begun about the fourth to fifth day, but it is far better to undernourish than to give too much nourishment. There is little danger of a patient starving to death if we give plenty of water, and hunger is by far preferable to a distended abdomen.

The management of a drain is of great importance, as quite a little damage can be done by its improper removal. The drain is usually left in for six days, not for the good that it is doing by being left in, but because of the harm it may do if pulled out. I never pull a drain. If it presents the least resistance, it is left in, regardless of the number of days. I have seen a temperature, almost normal, rise rapidly to 105 degrees Fahrenheit after the improper removal of a drain. If the drain is ready to come out, no resistance will be met with on its removal. You will not hurt your patient, nor will there be any rise of temperature. If it is not ready for removal, you will meet with resistance and have a distinct rise of temperature. This means that you have broken up a part of the adhesive wall that has formed around the drainage and some infection let

loose into the general cavity. A drain can be kept perfectly clean by the free use of hydrogen peroxide, and its removal is not a necessity on account of the disagreeable odor.

After removal of the drain a piece of rubber is rolled up and inserted into the drainage tract. This is the best method of keeping the tract open for a few days. I have tried removing the drain on the sixth day and leaving it out. This is all right in most cases, but in others the tract will heal too rapidly from without and we will have trouble. A cigarette drain is best made from a discarded rubber glove. Rubber tissue is often used for this purpose, but it is inclined to pack the gauze and become very hard, while the rubber is inclined to unroll and keep the drain loose and in good condition.

An anaesthetic should never be given to remove an abdominal drain, as we would mask one of our most important symptoms as to its removal.

Post-Operative Complications.—The following are most frequently encountered:

Pneumonia.
Nephritis with suppression.
Peritonitis.
Illeus or paresis.
Acute dilatation of the stomach.

Pneumonia is often seen following ether anaesthesia, seldom after gas and oxygen, and never as a result of its administration. Couch investigated the subject of post-ether pneumonias and found at the St. Thomas' Hospital in London, in 2,400 cases of ether, that 10 cases of pneumonia could unmistakably be traced to ether.*

Robb and Dettrick report 1,077 anaesthetics; 35 patients developed lung complications. (S. G. & Obst., Vol. III, page 56.)

The only sure treatment for this complication is prophylaxis—that is, the proper selection of the anaesthetic. Nephritis with acute suppression is more often seen as a complication than pneumonia, for the reason that in many of the cases there is already an existing nephritis. Usually one of the first symptoms to call our attention to this is the persistent vomiting. This is especially true if the patient has taken gas oxygen, for in ordinary cases we seldom have vomiting after its administration. The urine should be measured for the first week following a laparotomy, and when we find the amount below twenty ounces in twenty-four hours, with vomiting, we will usually find albumen and casts present. In this condition nothing has given me better results than sparteine sulph. gr. ii by hypo. every three hours until the quantity of urine has reached the normal. If the patient is unable to retain water by mouth, saline enemas every three hours should be given. According to the Germans, the administration of chlorides in nephritis is a bad proposition, but good authority could be cited to support the use of saline enemas in this condition.

In most of these cases we have an acute parenchymatous nephritis, caused by the elimination of toxic substances. If the kidneys can be made to eliminate the toxins already in the tissue, the source of supply having been removed, they will continue to carry on their function. In order for them to eliminate, we are compelled to furnish some fluids for this eliminative process to go on. If the patient cannot retain water by mouth, the saline enema is a necessity.

Plain water has been tried, but without results, due to the fact that the body fluids are saline in character and are attracted toward the intestinal canal by the less saline fluids if plain water is given.

In many of these cases, in spite of all treatment, the kidneys will refuse to excrete and death is the result. Were these cases less desperate, splitting the capsule of the kidney would be advisable. The condition is of the acute parenchymatous variety, and we have a badly swollen kidney under such pressure from its capsule that the remaining healthy portion cannot carry on the necessary function.

* Post-operative treatment by Morse.

Progressive peritonitis is recognized by the usual symptoms seen in these conditions under other circumstances. Treatment does not promise much. Elevate the head of the bed to prevent infection traveling upward. Saline enemas to dilute the poisons in the blood and promote their excretions, and morphine to keep the intestinal canal quiet, with appropriate stimulations, are about all we may rely upon.

Post-operative paresis is one of the gravest and most distressing symptoms after any operation, and especially after surgery of the intestines. We wish the bowels to remain in a quiescent state in order to promote healing, and the only way we can get rid of the quantity of gas that is causing the distention is to increase the peristaltic action. The condition is often confused with peritonitis, but the facial expression in the beginning is never so marked as in peritonitis, the pulse is not so rapid, and the temperature not so high. The blood examination in these cases is worthless, as we usually have a marked leucocytosis at the time of the operation, which, taken together with the post-operative leucocytosis, would give us a leucocyte count—something we do not have in paresis of the bowels occurring during the course of typhoid fever or other causes. This condition has been considered by many, and they differ very widely as to its etiology. The most logical cause, it would seem to me, is that in almost all cases we have an intestinal paresis following all abnominal operations, but in some cases the process of fermentation and gas formation is more rapid than in others, and the gut is so badly distended that the muscular coat of the intestine is powerless to act.

The same thing is true with the bladder. If this viscus is badly distended and permitted to remain so for any length of time following an operation, it loses the power of contracting, and this power can only be regained by not permitting it to again become distended.

Again, this condition is more often seen where the patient has been improperly prepared by poor purgation, or when the case is of such a nature that purgation is impossible.

The intestine is full of the products of digestion, hence the rapid gas formation. The disorganization of the sympathetic nervous system is a very plausible theory advanced by some, and on this theory they place acute dilatation of the stomach and intestinal paresis as produced by the same causative factor, but the symptomatology of the two conditions when they occur independent of each other is entirely different. In the treatment of this condition the one aim is to establish peristalsis as early as possible, and if not so badly distended that the power of peristalsis is entirely abolished, it can be induced by enemas of turpentine, glycerine, alum or the plain S. S. enema. But if the distention has progressed beyond certain limits, nothing will induce peristalsis. Eserine salycylate is at times very useful, and I think I have obtained excellent results from its use; but I seldom use it now, owing to the discussion entered into with a veterinary surgeon, who had administered it to horses with distention, and in six cases the post-mortem showed the intestines ruptured from its violent action.

After we have given other remedies a fair trial, I think opening the intestines is the proper procedure, for we can then be sure of our results. I have performed enterostomy in fifteen desperate cases, with two deaths. I think the principal point to be observed is to handle the intestines as little as possible. Go through the old incision, select the most available piece of intestine, place in a purse string of silk, and insert a large catheter into the lumen of the gut to act as a drainage tube, and then come out. This can often be done without an anaesthetic. The distention of the abdomen will disappear and the tension on intestinal sutures be relieved.

The resulting fecal fistula will heal within a few weeks, provided it is not in coaptation with the abdominal wall.

Acute dilatation of the stomach is quite

often seen in surgery of the intestines, especially in cases that are in weakened condition, where the nervous shock has been very great, and where there is marked distention of the abdomen. All three of these conditions are present in delayed operations for gunshot of the abdomen and intestinal obstruction. The etiology of this condition is not understood; therefore the treatment is in a very unsettled state. It is one of the gravest post-operative conditions with which we have to contend.

The treatment which seems to have given the best results is the continuous washing out of the stomach and elevation of the bed, permitting nothing by mouth, saline enemas to relieve thirst and stimulations.

(To Be Concluded.)

A PLEA FOR THE USE OF NITROUS OXIDE IN SHORT OPERATIONS.

By GEORGE S. FOSTER, M.D.,
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Manchester, N. H.

Nitrous oxide at the present time is used most extensively by our brothers of the dental profession. The dentist finds it most serviceable for producing a fleeting anaesthetic condition. Extracting teeth is a painful procedure for the majority, but none the less so than many short operations in the surgical curriculum. Why, therefore, should we not more frequently use this safe and efficient anaesthetic in this class of cases?

HISTORY AND REVIEW.

Nitrous oxide, nitrogen monoxide, protoxide of nitrogen, or "laughing gas," was first recognized as having the power to relieve pain by Sir Humphrey Davy more than one hundred years ago. Horace Wells, an American dentist, was the first to use it as an anaesthetic.

This gas is manufactured by a complicated process, the details of which will be omitted. The name of "laughing gas" is often misused when referring to nitrous oxide. No hilarity occurs if the gas be properly administered and the patient instructed to breathe very deeply. It is best taken by full, deep, oral inhalations. The face becomes flushed for a moment, then this is followed by a deadly pallor, and when anaesthesia is complete the jaw drops. This gas has no undue influence upon the heart and vaso-motor system.

Anaesthesia is produced by a direct action on the cerebral cortex. Also the nonoxygenation of the blood may aid indirectly, as with any general anaesthetic. The conjunctival reflex is often preserved after general anaesthesia is produced. The old-time theory that temporary glycosuria is produced by this gas has no foundation. Rarely any disagreeable after-effects result, except a light-headed sensation or dizziness for a few hours. The great advantage of this gas is in the fact that it is almost absolutely safe, for it is the safest of all of the anaesthetics.

At times it would seem better to administer a small amount of oxygen at the same time. As, for illustration, to anemic people, patients advanced in years, those who have pulmonary affections, and to children with hypertrophied tonsils. The consideration of contra-indications need not occupy our thoughts at this time, as they are very limited and unimportant. Only nine deaths have been recorded as being caused by nitrous oxide.

CLINICAL USEFULNESS.

During a tour of the surgical clinics of the Middle West, the writer visited the Presbyterian Hospital in Chicago. During the program, hemorrhoids, anal fistula and ischiorectal abscess cases were operated upon. This work was done in the clinic of Dr. Bevin, and

nitrous oxide was used in every case. Dr. Bevin clearly demonstrated how efficient this anaesthetic was for use in such short operations.

At this special clinic the patients walked into the operating room and reclined upon the operating table as if they were merely making ready for an examination. The patients were put in proper position and stirrups used when needed. All of this was done previous to administering the gas. The anaesthetist would then take his place, and, while the patient was taking deep, full breaths, the field of operation was cleansed. The operation was then done in a most careful and expedient manner. By the time that the dressings were applied the patient was again conscious. Some of these patients walked out of the operating room, while others, fully aware of their position, were put upon the carriage and removed.

How pleasant it must be for one to merely enter a short sleep and awake within a very few moments and find themselves relieved of their ailment. To him who has experienced the post-ethereal nausea, vomiting, retching, giddiness and headache, with a restless night to follow, this method of anaesthesia must appeal most strongly. Every surgeon should think for the comfort of his patient. To such a thoughtful practitioner this mode of anaesthesia surely appeals.

While visiting the clinics in Baltimore, Philadelphia and New York, the writer had extensive opportunities to witness the various work which it is possible to do under the influence of nitrous oxide. Opening furuncles, closing sinuses, perforating bone tissue, simple dilatation and curettement, amputations of fingers and toes, breaking up joint adhesions, reducing fractures, et cetera, are all very comfortably done under this influence. It is even possible to do a gastrostomy by this method.

Nitrous oxide is not unpleasant to take, and when a patient realizes how simple the procedure is, the general characteristic fear of ether and chloroform are entirely eliminated. How much more good can be accomplished under these circumstances. By the use of this gas the direct relations between the operator and the patient are made much more pleasant. The arduous duties of the nurse are lessened, and, in fact, the general tone of a system without unpleasantness prevails in every corner.

CONCLUSIONS.

1. Nitrous oxide should, for the beforestated reasons, be more generally used by surgeons.

2. The post-operative comfort of the patient should be one of our first thoughts. We must necessarily seek to eliminate the nausea and vomiting of ether and chloroform when possible.

3. A great amount of time is saved which is ordinarily used up in transporting the patient and administering the anaesthetic.

4. The cases should be selected. Only those operations that can be accomplished within ten minutes should be attempted.

5. If the operator be skillful and rapid, and at the same time dexterous, many operations that are now done under ether or chloroform could far better, from all points of view, be done under nitrous oxide.

967 Elm Street.

A CASE OF CONGENITAL GANGRENE OF THE RIGHT FORE-ARM, WITH SUCCESSFUL AMPUTATION, IN AN INFANT FIVE DAYS OLD.*

By RANDOLPH WINSLOW, M.D.,
Baltimore, Md.

On June 3, 1911, I was consulted by Dr. T. H. Legg, of Union Bridge, Md., in regard to a baby three days old with congenital gangrene of the right forearm. The history of the case is as follows:

W. H. G., a boy baby, was born June 1, 1911, at full term. The mother was only 18 years of age and healthy, the father 25 and also in good health. The grandparents were healthy people, and there is no history of any specific or tubercular disease in the immediate family. The labor was natural and of twelve hours' duration; position of the child in utero L. O. A. Labor was unimpeded, and the cord was not wrapped around the neck or arm; neither were any amniotic or other bands noticed. The head was born, and the arm followed normally; the child was not cyanosed and cried lustily. Dr. Legg noticed that the right arm was gangrenous almost up to the elbow, with a distinct line of demarcation already formed. He expressly notes that there was no sign of cord pressure or of pressure of any kind. The child's weight at birth was 5½ pounds.

He was brought to the University Hospital on June 5, 1911, when five days old. There was complete moist gangrene of the hand and

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forearm, which were considerably swollen, and a somewhat irregular line of demarcation had formed a short distance below the right elbow. It was not judged safe to administer an anaesthetic, and the amputation was made at the elbow joint without any anasthesia.

The child cried some, but bore the operation very well, and became quiet when supplied with a bottle full of milk. He was sent back home on the next train, a distance of forty miles. He did well, gained weight rapidly, and the stump had entirely healed in three

weeks. Unfortunately, he died when two months of age of cholera infantum.

The points of interest in this case are the early age at which amputation was done and the etiology of the disease.

As to the first item, I have not made any search of the literature in order to discover if there are earlier cases of amputation than the one here recorded, but I am not aware of any. The ability of a frail child of that age to undergo such a mutilating operation without an anaesthetic is also noteworthy. It is possible that an anaesthetic might have been well borne, but I feared to attempt it.

As to the etiology of the condition I am in entire ignorance. I am well aware that intrauterine amputations have been observed and are attributed to the constriction of the limb by encircling amniotic bands. Sometimes more than one limb is amputated in this manner, and Playfair, in his "Midwifery," published in 1880, figures a case in which all four limbs had been amputated in utero.

In the case I have just reported the attending physician, a man of exceptional ability, has specifically stated that no pressure by the cord or by bands was present.

Of course, there may have been a thrombosis or embolism of the vessels of the arm, but what would have caused such conditions?

The gangrene was not of the dry or anaemic type, but was more of the obstructive type. The forearm and hand were swollen, discolored and offensive.

IMPORTANT FACTORS IN THE PROPHYLAXIS OF THE MALARIAL FEVERS*

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The discovery of the relation of the mosquito to the transmission of the malarial fevers placed the prophylaxis of these infections upon a scientific basis, and much has been accomplished by the destruction of these insects, or by protecting man from their bites. While this is true, it must be admitted that in many, if not most, localities in the tropics or subtropics, a complete eradication of mosquitoes is an impossibility, and other methods of prophylaxis have to be resorted to in order to achieve success in the prevention of malarial disease.

We now know that malaria is transmitted to man by a certain species of mosquitoes and that if it were possible to either destroy all malaria-carrying mosquitoes, or kill all the plasmodia in the blood of infected individuals, we would succeed in preventing malarial infection in any locality. While this is theoretically possible we know also in most instances it is practically impossible and hence we are forced to combine methods looking both to the destruction of the mosquito and the plasmodia.

In order that prophylactic measures be successful it is also essential that we have the support of the public, and therefore the education of the latter regarding the etiology and prophylaxis of malaria becomes of prime importance in any campaign against these infections.

In this paper I desire to call your attention to three factors which appear to me to be of great importance in malarial prophylaxis—*i. e., the discovery of latent infections; the proper treatment of initial and latent infections; and the education of the public.*

The Discovery of Latent Infections. By a latent malarial infection we understand one in which the plasmodia may be demonstrated in the blood, but in which no clinical symptoms of sufficient gravity to attract attention are observed. The term includes both those instances in which no definite symptoms of malaria have ever been present, and those cases in which the disease is latent in the intervals between recurrences. While in many latent infections no definite clinical symptoms are present, if one takes the temperature of the patient it will often be found above normal, and careful inquiry will elicit the fact that the patient suffers more or less from headache, loss of appetite, and general malaise.

It is well known that in malarial localities a considerable proportion of individuals in apparently good health are carriers of the plasmodia, and that the natives of such regions possess an acquired immunity to the usual effects of the malarial toxin. The history of such acquired immunity is that of repeated attacks of malarial fever, each one a little less severe than the one preceding, until at last a clinical cure is effected. However, most individuals who possess this acquired immunity show malarial plasmodia in the blood at intervals, so that the immunity really consists in a tolerance to the toxin or toxins, and any unusual strain or exposure will often result in an acute attack of the disease in such individuals.

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It is obvious that while these individuals are fortunate in possessing a tolerance to the malarial toxin, they are dangerous to those surrounding them, as they are carriers of the plasmodia, and are thus able to infect mosquitoes.

It has also been demonstrated that latent infections are especially prevalent among children, although in most malarial localities the plasmodia have also been found in a large percentage of the adult population. Koch[1], from his observations in Africa, concluded that latent infection was practically confined to children, and his observations were soon confirmed by Thomas[2], Stephens and Christophers[3] and by James[4], but many other authorities have since proven that latent infection is very frequent in adults, and that the true index of the prevalence of these fevers in any region can only be determined by the examination of the blood of both children and adults.

The following tables give the results of several investigators as regards the prevalence of latent malaria in children, in various localities:

TABLE I.

Koch's Observations in Kaiser Wilhelm's Land, New Guinea.

Place	Age	No. Examined	Percentage Infected
Bogadjine..	Under 2 years	10	8 cases or 80. %
Bogadjine..	2 to 5 years	12	5 cases or 41.6%
Bogadjine..	5 to 55 years	86	0 cases or 0. %
Bongn.....	Under 2 years	6	6 cases or 100. %
Bongn.....	2 to 5 years	13	6 cases or 46.1%
Bongn.....	5 to 10 years	17	4 cases or 23.5%
Bongn.....	10 to 40 years	39	0 cases or 0. %

TABLE II.

Thomas's Observations in Manos, North Brazil.

Age	No. Examined	Plasmodia Present	Percentage
6 mos. to 2 yrs...	9	3	33.3
2 yrs. to 5 yrs...	38	20	52.6
5 yrs. to 8 yrs...	51	28	54.9
8 yrs. to 10 yrs...	59	27	45.7
Totals	157	78	49.6

At Accra, West Africa, Stephens and Christopher found from 23 to 90 per cent of babies infected; up to 8 years of age, 20 to 57 per cent; up to 12 years of age, 28 to 30 per cent; and after the twelfth year infection was found to be rare.

James, in India, found the percentage of latent infection in native children to vary greatly in different localities. At Mian Mir, children up to 2 years of age showed 80 per cent infected; up to 5 years, 66 per cent; up to 10 years, 50 per cent; while children older than 10 years showed no infection. At Ennur, children up to 3 years of age showed 65 per cent infected; up to 5 years, 51 per cent; up to 10 years, 46 per cent; and up to 15 years, 16 per cent. He found no infection in natives over 15 years of age.

Annett, Dutton, and Elliott's[5] observations are given in the following table:

TABLE III.

Annett, Dutton, and Elliott's Observations in Nigeria, Africa.

Age of Child	Per Cent Infected
0 to 1 year	27.3%
1 to 2 years	63.0%
2 to 3 years	63.0%
3 to 4 years	51.0%
4 to 5 years	48.8%
5 to 6 years	34.8%
6 to 7 years	6.6%
7 to 8 years	27.5%
8 to 9 years	25.0%
9 to 10 years	14.0%
10 years and above	10.0%

At Camp Stotsensburg, one of the most malarial localities in the Philippine Islands, I[6] examined the blood of 45 native adults and 180 native children, all of whom at the time of examination were free from symptoms of malaria. The following table gives the result of these examinations, but only includes 147 of the children, as only in this number could I obtain the exact age:

TABLE IV.

Observations at Camp Stotsenburg, Island of Luzon, Philippines.

Age	No. Examined	No. Infected	Per Cent Infected
1 to 5 yrs.....	40	30	72.5%
5 to 10 yrs.....	54	20	37.0%
10 to 15 yrs.....	53	13	24.5%
Adults	45	28	62.2%
Totals	192	91	47.4%

The large percentage of adults showing latent infection in this locality was contrary to the reports of Koch, Stephens and Christophers, and James, that only the children in malarial localities were thus affected to any extent, but my observations have since been confirmed, in different localities, by Ollwig[7], Panse[8], A. Plehn[9], Darling[10], the Sergents[11], Hope, and others. The following tables give the results of these observers:

TABLE V.

Ollwig's Observations in Dutch East Africa.

Age	No. Examined	Plasmodia Present	Percentage
Under 1 year	93	33	35.4
1 yr. to 5 yrs.....	220	83	37.7
5 yrs. to 15 yrs.....	971	109	11.2
Adults	650	105	16.1
Totals	1,934	330	17.0

TABLE VI.

Panse's Observations in Tonga, East Africa.

Age	No. Examined	No. Infected	Per Cent Infected
Under ½ yr.....	16	6	37.5%
Between ½ and 1 yr.	9	6	66.6%
1 year of age.....	25	22	88.0%
2 years of age	20	17	85.0%
3 years of age	28	25	89.2%
Between 4 and 5 yrs.	48	34	70.8%
Between 6 and 7 yrs.	84	52	61.9%
Half-grown children .	314	125	39.4%
Adults	1,683	258	15.3%

TABLE VII.

A. Plehn's Observations in The Kameruns, West Africa.

Age	No. Examined	No. Infected	Per Cent Infected
Under 2 years.....	18	17	94%
Between 2 and 5 yrs.	26	24	92%
Between 5 and 10 yrs.	40	34	85%
Adults	43	26	60%
Totals	127	101	79.5

In the Canal Zone, Darling found latent infections in 10 per cent of all laborers examined, while 30 per cent of West India laborers were found infected, despite the fact that these laborers had been exposed to malaria since infancy, thus showing that their immunity consisted in a tolerance to the toxin of the plasmodia rather than to the plasmodia.

TABLE VIII.

Sergents' Observations in Algeria, Africa.

Age	No. Examined	Plasmodia Present	Percentage
1 to 5 years	1,316	267	20.2
6 to 10 years	1,360	326	23.9
11 to 15 years..	933	272	29.1
Adults	2,471	722	33.2
Totals	6,080	1,587	26.1

of 3,609 children examined, 867, or 23.9 per cent, were infected.

Of 2,471 adults examined, 722, or 33.2 per cent, were infected.

In Pabna, Hope found that while 922 adult natives showed plasmodia in their blood, only 862 children examined at the same time presented them; in other words that the adult malarial ratio was higher than the ratio in children.

Consolidating the reports given above, regarding the prevalence of latent infection, at various ages, we reach the following results:

TABLE IX.

Prevalence of Latent Infection at Various Ages. Consolidated Table.

Age	No. Examined	No. Infected	Per Cent Infected
1 to 5 years	1,684	502	29.8
5 to 10 years ...	1,645	463	28.1
10 to 15 years...	1,390	437	31.4
Adults	4,931	1,139	23.0
Totals	9,650	2,541	26.3

A study of this table shows the percentage of latent infections varies but little in adults or children in badly infected localities, and that it is just as important to determine the percentage of infected adults as of children, if one desires to know the exact malarial index of any region.

From the summary of the observations given it is evident that latent infection must be considered a most important factor in malarial prophylaxis, as a large percentage of such individuals have developed *gametes,* the active agents in transmitting the disease to the mosquito. From my own observations I believe that about 50 per cent of latent cases are *gamete carriers,* and it is easy to calculate

the immense harm such cases do in regions where proper species of mosquitoes are present, when one remembers the large number of latent infections in such localities.

Admitting then the importance of the discovery of these cases of latent malaria, the question arises, what are the most practicable methods available for determining their number in any locality? In many regions it is possible to enforce a blood examination of the natives, and thus it is easy to discover the amount of latent infection. In our own country this can only be accomplished with the co-operation of the public, and by competent physicians detailed by State or local boards of health. In every malarial locality an effort should be made to educate the people regarding the importance of latent infections, and after they have once realized this they will gladly submit to a blood examination. In such localities all school children should be examined, and, if possible, the adult population, and those found infected should be properly treated until a blood examination results negatively.

We have accomplished but little in this country in this respect, the observations of Sims and Warwick, at Taladega, Ala., being the only ones I know of in which an effort has been made to determine the amount of latent infection in children. These observers found that between 8 and 9 per cent of the children examined by them showed latent infection, and that of these only 3 1-2 per cent developed symptoms in five months. Such observations are of the greatest practical value, and should be repeated in every malarial locality. After a preliminary educational campaign it should be possible for the State or local boards of health to undertake the examination of the blood of both adults and children in badly infected districts, and it is obvious that the proper treatment of all cases of latent infection thus discovered would do much in lowering the malarial rate in these localities. The examination of the children relative to enlargement of the spleen would be a useful method in our own country, but, in my opinion, is far inferior to the examination of the blood. The discovery of latent infection depends upon an examination of the blood of both children and adults, and if physicians in malarial regions would insist upon such examination in all cases coming to them, a large number of infections would be discovered and properly treated.

Municipal and State boards of health should provide for the free examination of blood so that physicians who are unable to make examinations can have them made easily and promptly, and the success which has attended the efforts of the State Board of Health of Florida in this direction is evidence that the method is practical and of the greatest value to the people. Any physician can easily learn how to make a good blood smear, and if facilities are furnished by the municipality or State for staining and examining them there will be no valid excuse for the neglect of such an examination in any case.

The Treatment of Initial and Latent Infections. A very large proportion of latent infections are the result of untreated or improperly treated initial infections. While, in many instances, the plasmodia may be found in the blood for several days before the onset of an initial infection, it is a fact that most latent infections have been preceded by one or more acute attacks of malaria. The profession is very largely to blame for these cases, in civilized regions, for if the initial attack had been properly treated no plasmodia would have survived, and thus latent infections would have been prevented. As showing the large proportion of such infections in patients who have suffered from malarial paroxysms, I may mention observations[12] made at the United States Army General Hospital in San Francisco, and in the Philippine Islands. Of 1,653 patients showing plasmodia in the blood, 424, or a little over 25 per cent, presented no symptoms of the disease at the time of examination, or, in other words, 25 per cent of the patients presented latent infections. All of these pa-

tients had suffered from acute attacks of malaria, and the only conclusion possible was that most of them had not been properly treated during such attacks, or the disease would not have become latent, for the vast majority were examined in San Francisco where reinfections could be excluded, as malaria is not prevalent there, and several weeks had elapsed since they had left the Philippine Islands. Many of these patients were *gamete* carriers, and were thus able to infect mosquitoes.

It will thus be seen that the proper treatment of initial infections is of immense importance in the prophylaxis of malarial disease. The forms of the plasmodia which are capable of undergoing development in the mosquito, or the *gametes*, do not develop in the blood of man unless the infection has lasted for a period of several days (from 9 to 15), and it is obvious that if we can kill the plasmodia before *gametes* develop our patients will not become carriers of the infection. On the other hand, if they are untreated, or improperly treated, *gametes* will develop sooner or later, in most instances, and the patients will become a constant source of danger to those associated with them.

A very great deal of the malaria prevalent in every locality where civilization exists is directly traceable to improperly treated patients. The practice of regarding malarial infections as cured because the active symptoms have disappeared is a most common and a most pernicious one, and one that is responsible for the transmission of a very large proportion of malarial disease. It is but too true that the medical profession is largely to blame for this error, for nothing is more common than to observe malarial patients walking about after only a day or two of treatment, inquiry eliciting the fact that the attending physician has given no directions whatever concerning the continued use of quinine. It must be remembered that *all* malarial infections are resistant to treatment; that the mere disappearance of the symptoms is no index of the destruction of all the plasmodia which may be present; and that a continued course of quinine is absolutely necessary to rid the system of even the mildest malarial infection.

The proper treatment of *latent* infections is of as great importance as that of initial infections and should follow the same general lines, but in too many of these cases *gametes* have already developed, and these, as is well known, are very resistant to quinine, and therefore it will have to be continued for a longer time, and the outlook, so far as preventing the infection of the mosquito, is less favorable. The researches of Darling show that the continuous administration of quinine in full doses to *gamete* carriers for a considerable time, results in reducing the number of *gametes* to a non-infective minimum, but it is much easier to prevent their development by the proper treatment of the initial infection than it is to destroy them after they have once been developed. However, in all latent infections quinine should be administered as in active infections until the plasmodia have disappeared. It is these cases which are continually infecting the mosquitoes, and thus increasing the number of human infections, and unless these "carriers," as they may be called, are discovered and properly treated, it is almost hopeless to attempt to rid any locality of malaria where mosquitoes cannot be eradicated. The following methods of treatment will be found most efficacious in initial and latent infections.

In tertian and quartan malaria, quinine should be given in doses of 0.32 gm. (gr. V) every four hours until 1 to 2 gm. (gr. XV to XXX) is given within the twenty-four hours, and this amount continued until the active symptoms or the plasmodia have disappeared. After this the drug should be continued in doses of 0.65 gm. (gr. X) every day for two weeks, and in doses of 0.32 gm. (gr. V) every day for two weeks longer. For two or three months thereafter 0.65 gm. (gr. X) of quinine should be taken once a week.

In æstivo-autumnal infections, unless pernicious symptoms be present, quinine should be given by the mouth in doses of 0.32 gm. (gr. V) every four hours until active symptoms or the plasmodia have disappeared. For the next two weeks 1 gm. (gr. XV) of quinine should be taken daily, and for two weeks thereafter 0.65 gm. (gr. X) every night on retiring. For at least two months thereafter the drug should be administered in doses of 0.32 gm. (gr. V) daily.

In those latent cases in which *gametes* are numerous (more than one to 500 leucocytes) it will be necessary to take larger doses of the drug, as Darling found that it required daily doses of 2 gm. (gr. XXX) continued for two or three weeks to reduce their number to a non-infective ratio.

All malarial infections should, if possible, be isolated in a screened room while the blood contains the plasmodia, in order to prevent the infection of mosquitoes. In many instances, especially of latent infection, this precaution cannot be observed, but it should always be insisted upon when conditions are such as to render it practical.

The Education of the Public. I have noted the importance of the discovery of latent malarial infections and their treatment, but unless an enlightened public opinion supports the physician his efforts in this direction will meet with failure.

All of our methods of malarial prophylaxis depend for their success upon the support of the public, and it is the duty of the medical profession to so present this subject that the public will not only desire, but will demand that proper measures be taken for the prevention of these infections. The same methods which have been so useful in educating the public to the importance of the hookworm can be just as advantageously used in the campaign against malaria.

Educational measures should be instituted by the State boards of health, and as a means to this end, the appointment of a commission composed of physicians for the study of the extent of malarial infections in the State and the methods most suitable for combating them, is an essential. Such commissions should be connected with the State boards of health and should ascertain the amount of malaria present in each locality, the most practical methods of prophylaxis, and the expense of instituting such methods. The reports of the commission should be published as public documents and widely circulated among the people.

Addresses upon the prophylaxis of the malarial fevers, illustrated by lantern slides showing the development of the plamodia in both man and the mosquito, as well as the mosquitoes concerned in transmission, should be given by qualified physicians, and will be found one of the most efficient methods of public education that we possess. The members of the State commission could be sent from place to place for this purpose and the expense involved would be amply repaid by the good accomplished.

Bulletins published by municipal and State boards of health, explaining the etiology and methods of prevention of malaria should be sent to every householder, and such bulletins should be well illustrated and contain in small compass the essential rules for malarial prophylaxis.

That such methods of public education are practicable have been proven by the State Board of Health of Florida. In that State a commission was appointed by the State Medical Association for the study of malaria and the State Board of Health has recently published a most excellent bulletin upon these fevers for public distribution, a bulletin which must result in great good to the people of that State.

The economical damage done any community by the prevalence of the malarial fevers should be dwelt upon in addresses and bulletins, and statistics illustrating this point should be collected and distributed among the people. Attention should be called also to the grave

complications which follow repeated malarial infections, resulting in the invalidism of a large proportion of the inhabitants of badly infected districts.

The public press possesses great power in this country, a power which is at the disposal of the medical profession in the campaign against malaria. It has always been the experience of sanitarians that the newspapers are more than willing to assist in any project looking toward the conservation of public health, and welcome contributions which instruct the people in the prevention of disease. I am very sure that the papers of every State in which malaria is prevalent would freely open their columns to contributions regarding prophylaxis and would loyally support all proper efforts for the prevention of these fevers. The help thus afforded in public education would be almost incalculable, while the active support of the press would make possible measures which otherwise would result in failure.

The teaching of the essentials of malarial prophylaxis in the public schools, in regions in which these fevers are endemic, is a most useful method of public education. The young are receptive and there is no better way of interesting the parents than by the instruction of the children. Not only is this true, but what one learns in youth becomes a matter of habit and will be practiced throughout life. The adage that "You cannot teach an old dog new tricks," is often exemplified when attempts are made to instruct the adult population in modern views of the etiology and prophylaxis of disease, and for this reason it is most important that the young be thoroughly taught regarding the prophylaxis of malaria.

Members of the medical profession may accomplish a vast amount of good by missionary work among the people in the localities in which they are practicing. A few words of instruction regarding the etiology of malaria, and directions for applying prophylactic measures in the home, will often do more for the cause than either lectures or bulletins. In this matter the profession has more than a nominal interest, for the presence of much malarial infection in any place is really a reflection upon the ability, public spirit, and activity of the medical practitioners of that locality.

The notification of cases of malaria would do much toward impressing the public with the importance of these infections. Every case of malaria should be reported to the health authorities, and they should be empowered to enforce proper precautions against its transmission, as is done in other infectious diseases. Such notification would focus the attention of the public and lead to the conviction that these fevers are really infectious and a serious menace to the community.

The creation of a national commission for the study of malaria as it occurs in the United States, first suggested, I believe, by your Secretary, Dr. Seale Harris, would prove of inestimable benefit to the entire country. Such a commission could investigate the fevers prevalent in malarial regions with a view to determining the proportion actually due to malarial infection, and the methods of prophylaxis which could be most economically and successfully employed in the endemic centers. A malarial survey of the entire country could thus be secured and an intelligent effort could then be made to eradicate the disease. At the present time the greatest confusion exists regarding the prevalent fevers of many localities in the United States, and if nothing more were accomplished by the commission than a scientific classification of these fevers, a great good would be accomplished, and the appointment of such a commission amply justified.

In Italy the function of a national commission has been fulfilled by a national society known as the Society for the Study of Malaria. This society has the support of the government and controls malarial prophylaxis throughout Italy. Its efforts have been crowned with such success that the mortality of malaria has diminished almost 75 per cent,

from 16,000 deaths annually to about 4,000, while there is probably no one so ignorant in that country as to doubt the efficiency of the methods instituted for the suppression of the disease, or who does not know why they were instituted and how they are proving successful.

I believe that the time is not far distant when we will equal Italy in our application of malarial prophylaxis, and when such regions as the beautiful Mississippi delta, now ravaged by the most pernicious forms of malarial fever, will be as free from these infections as the more northern parts of our country. Malaria is a preventable disease, and the earnest and intelligent application of prophylactic measures *must* result in its ultimate disappearance. Celli has well said that the prophylaxis of malaria is a purely economical question, and that any community which cares to spend the money can rid itself of the disease. Fortunately, as shown by Colonel Gorgas, the cost is not excessive, even in the most badly infected localities, for he estimates that the cost for sanitation on the Isthmus has averaged $3.50 *per capita* annually, of which $2.00 was spent upon mosquito destruction. When one remembers that this expenditure has resulted in the disappearance of yellow fever and a reduction in the death rate of malaria from 16.21 per thousand to less than 2. per thousand, the cost sinks into insignificance.

We now know the etiological factors concerned in the production of the malarial fevers and their method of transmission, and we also know that proper prophylactic methods have been followed by the disappearance of the infection from numerous localities. I believe, therefore, that it is simply a question of time when the malarial fevers will be as rare in civilized countries as are now some of the acute infectious diseases, and that eventually these infections will disappear. Italy has pointed out to the world the proper legislative control of this disease, which rendered her lands barren in the past and destroyed thousands of her inhabitants, and the enforcement of similar prophylactic measures in this country will be followed by equally successful results.

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Next Meeting Jacksonville, Fla., November 12, 13, 14, 1912.

Gullible Doctors and Medical Directories

How many of us have continued meekly to submit, at brief intervals, to the impositions of certain so-called Medical Directories?

Their publishers are versed in all the arts of appealing to the unwary.

Their strongest pull is through our vanity. They solicit our names and addresses for publication, and suggest that we also give them a list of all our official titles, positions and honors, which, for a consideration, they will print in large, conspicuous type, and they enclose samples showing the names and office adddresses of physicians who have not submitted to the extortion, printed in small, obscure type, while another clipping shows how, if you pay for it, you will be presented in bold-faced capitals, with all your honors draped around you.

Now, we all know that it is a bare-faced, sordid advertising scheme. Examination of one of the largest, most unwieldy and shabbiest of these directories shows that not only the most obscure and trifling doctor can scare up enough titles, positions and membership to make an Oxford professor turn green with envy, but that the most blatant, conscienceless quacks make the biggest showing, while men of eminence who scorn such self-laudation are hardly visible in the small type that represents them. Yet too many of us determine that our competitors shall not outshine us, and sacrifice our hard-earned dollars to pay the price.

We hunt up our college titles, society offices we have held, insurance positions, etc., and make all the display possible. And who reads it? You read it to see that the publishers have your name in bold type, and the semi-patent medicine manufacturers, fake coal oil and gold mine promoters and that ilk read it, set you down as an "Easy Mark," and flood you with samples or literature.

Reputable physicians should remember that

in patronizing such a publication they are aiding quackery and lowering the standards of our ethics, because the most disreputable characters use it as a means of exploitation. Self-respecting physicians should refuse to allow their names even in diminutive type published in such directories, which should be given over entirely to quacks, who seem to be excellent patrons of this scheme to "separate doctors from their hard-earned dollars."

THE A. M. A. MEDICAL DIRECTORY.

In contra-distinction to the type of publications just described is the Medical Directory published by the American Medical Association. There are not enough dollars in existence to induce the publishers to exploit any quack or unworthy physician. It contains all the desired information regarding the 174,000 American physicians, whether they are subscribers or not, and publishes the important facts regarding all the reputable hospitals, sanatoriums, medical colleges and medical laws of the examining boards, boards of health, and medical societies in each State of the Union. Indeed, it is a wonderful storehouse of information regarding medical men and medical affairs of the United States, Canada, the Canal Zone, and our territorial possessions. The writer has had the privilege of visiting the editorial rooms of the American Medical Association Medical Directory, and he knows that no labor or expense is spared to make its information absolutely accurate. The volume, though of immense size, is a work of art both from the typographical and bookbinding viewpoint. Our opinion is that the Medical Directory published by the American Medical Association is the most valuable publication of its kind ever issued, and it, and no other medical directory, should be in the library of every progressive physician.

Fee Splitting

A new feature has arisen of recent years in the economic side of medical practice, which, unless it can be properly regulated, or entirely eliminated from our ranks, must cause great confusion, and in the end produce a just loss of respect for the one profession that has served the people best and been closest to their lives. It is useless for the upright among us to claim that fee-splitting is a rare occurrence, for there can be no doubt that it is widespread, more even than most would think, and is in all probability being practiced in every city of any importance, and very likely in many smaller communities, where a number of specialists practice, particularly, we regret to say, if they are surgeons. The practice has grown up all the more readily because those who are possessed of a normal moral integrity, and those who have had the interest of the laity and the profession at heart, have refused to believe and to investigate reports of such conduct among their fellows, while those who have bought and sold sick men are first and loudest in their condemnation of the practice, and very doubtful in reality if such a thing even exists.

It is our desire to look frankly at the facts which confront us, for they are facts; to study the causes which led to their existence, to estimate their results from the standpoint of all concerned, and to suggest possible plans for correction.

The factors which led to the existence of the lamentable state of affairs may be given from the viewpoint of the man, the specialist, who buys, and from that of the man who sells. The man who buys his practice in any profession has always been considered the lowest of his kind, unworthy of the respect of his fellows; he is invariably made of inferior stuff from the intellectual point of view, and from the moral point wanting. He is sweet-mouthed, smooth-tongued and unaquainted with veracity; he is never a humanitarian or a philanthropist, and never able to get business by following legitimate professional standards, but buys sick men as butchers buy beef, and as the pawn-broker buys his plunder, for the profit to be gained. It would be difficult to understand how one who had made

purchase of an individual who simply thought himself ill could afford to refuse to operate on him for the money; he is bought with a price; he belongs to the buyer, and the money —that is it—must be extracted, fee plus commission.

Let us look at the man who sells—and far be it from us to accuse the great host of physicians in this country—but there are many, and the number is growing constantly. From his standpoint the causes are more urgent and apparently more justifiable. First, the man who sells his referred work on a commission, or per capita basis, is usually poorly paid for the services rendered in his community, often because he is poorly informed and poorly equipped, or because he must compete with such for a livelihood, and he feels that the individuals of his community owe him something he can collect only by secret methods. Second, he does work for individuals and families who make no effort to pay him, and whom he cannot or dare not force to pay, and feels that when an opportunity comes to get money from these people, even indirectly and without their knowledge, it is but a chance to collect what is justly his. Third, often in a given case the attending physician does a large amount of service, when a complication arises necessitating surgical work; the surgeon operates, collects a handsome sum, often of borrowed money, for his services, thanks the doctor, wishes the patient well, and leaves the patient to the physician's care during a long, tedious and stormy recovery, and the physician gets—nothing but blame for a slow return to health. He feels justly that he should be entitled to a part of the only money that could be raised, and that if he lets the patient know he is to get that part, objection or refusal will be offered.

The cases where patients are sent to physicians by the laity, who in their turn receive a new hat or a pair of shoes, are due to emergencies in the affairs of weak-minded physicians, and they should properly be classed with beggars.

The results of the fee-splitting practice are manifold. First, patients will not be referred to the specialist most capable of giving competent service, but to the one paying the highest commission, just as potatoes are sold. If they are honest people and have settled their account with their physician, they are being robbed of their money in the sum of the commission and often in excessive fees, which their physician swears are just especially in the light of the great skill of the specialist to whom they are referred—robbed indeed by two men who have ingratiated themselves under the cloak of the great profession of medicine and the great institutions with which they affiliate. The specialist who is attempting to rise in his profession legitimately by merit fails, or does not get his share of work, because he is unwilling to resort to such "sharp practice." The public will learn of this fee-splitting, as they are indeed already learning, will lose confidence in their physician, and refuse to allow him to refer them to a specialist, and will put themselves in his hands and remain under his care until entirely well, thus depriving the physician of his rights to attend them as he would if he had their confidence; they will also demand that the surgeon reduce his fee by the amount of the commission. Again, and worst of all, doubtless many would receive operative treatment under such a system who had no need of such treatment, for with dishonest principles and money as an incentive it requires no great stretch of imagination to see how this would follow. Brain cases would not be sent to the neurological surgeon, gynecology to the gynecologist, but all to the fee-splitter.

The remedy will not be easy to apply, and there seem only three possibilities. First, the whole practice of fee-splitting should be abolished by active members of associations telling in open meeting what they know of it, what offers have been made them and by whom. Second, if it is considered by all that the practice is correct, it should be made ethical by action of the associations upon an

agreed percentage basis, and the public should be apprised of the fact. Third, the suggestion has been made recently in a lay magazine that the specialist and practitioner should present and collect their bills at the same time, each for his proper fee.

Dr. Rupert Blue

The appointment of Dr. Blue to the important post of Surgeon-General of the Public Health and Marine Hospital Service promises an energetic continuance of the wise plans and systematic organization inaugurated by his lamented predecessor, Dr. Wyman. He is a man in the prime of life, and equipped by wide experience to meet the difficulties and solve the problems that demand immediate attention. His promotion came to him while he was on duty at Honolulu. The Washington dispatch announcing his appointment says:

"He is remembered as the man who stopped the bubonic plague in San Francisco. He discovered the fact that rats and ground squirrels spread the disease, and originated a plan to exterminate these animals." Though the above claim is probably much broader than Dr. Blue himself would authorize, yet the fact remains that in San Francisco he demonstrated his ability to do good work on a large scale. The Journal wishes him success.

Open Treatment of Fractures

One of the most important of recent advances in surgical procedures is the open treatment of fractures of the shafts of the long bones.

As practiced in former years the replacement and retention of the fragments in a severe, comminuted fracture was surrounded with almost insurmountable difficulties. However educated might be the sense of touch and well trained the surgeon's vision, to treat such a case was to work in the dark, and the result was problematical.

The perfection of aseptic technique has removed the dread surgeons used to feel of transforming any fracture into a "compound" condition by exposing the bone to the air. Then the next rational step was to apply some form of sterilized retainer directly to the fragments, secure them with pins, screws or wire, close the wounds, give proper outside fixation and wait for nature's splints to render no longer necessary those fashioned by the hand of man. All the work is in sight, and when closed can always be inspected with the fluoroscope. Afterward came the disagreeable supposed necessity of removing the buried fixtures. But the tolerance of the tissues to foreign bodies which are smooth and have no rough or sharp places, has been found sufficient to allow apparently permanent retention of such plates and screws without objectionable results. Instances are reported of plates still *in situ* five years since their application. These are, of course, the successful cases. Not all are such. Sometimes continued suppuration compels their removal.

Dr. William Fuller, of Chicago, advocates the open treatment for practically every fracture that is difficult to reduce or to hold in position, "regardless of its location, type or kind." Certain essentials must not be overlooked. First, instruments and appliances especially constructed for the purpose are a *sine qua non*. The ordinary hospital apparatus will not answer. The fingers, gloved or ungloved, must be kept out of the wound, and the fragments handled with sterilized forceps. The Lambeth forceps as modified by Lentz is very useful for handling plates or bone. The plate must be clamped to its place while holes are being bored in the bone, a very little smaller than the screws, and the latter screwed home, cutting a thread for themselves.

After closing the wound it is recommended to fix the limb in a plaster of Paris casing, grasping the joints on either side of the fracture, and suspending the limb at considerable

elevation from the body to obviate swelling. In a fracture of the femur the whole side, from the ribs to the foot, should be fixed by the case. Martin, of Philadelphia, in an able article on the subject, read in the Section on Surgery of the A. M. A. at Los Angeles, and published in its Journal, October 21, recommends such a casing, and that while still soft it be split so that "in part they can be removed, allowing the seat of the operation to be inspected, and massage and passive movement applied as soon as advisable."

Success depends upon exact apposition, firm fixation with close fitting, strong, well secured, unirritating plates and screws of suitable metal highly polished, absolute asepsis from first to last, so far as is humanly possible, and the elevation, support and immobilization of the limb for a proper period of time.

Frequent X-ray examination of the plates should be made to see that no post-operative displacement of fragments is allowed to remain uncorrected.

A refinement on the open treatment is proposed by Dr. Robert T. Morris, Professor of Surgery, New York Post-Graduate School. He operates guided constantly by the fluoroscopic pictures. Extension and replacement being visibly accomplished, he plunges a trocar and canula through the superimposed tissues, first sterilizing skin and instrument. Reaching the desired point the trocar is removed, leaving the canula. A drill is then passed through the canula and bores through the adjusted fragments at the proper angle to hold them rigidly in proper position. Then the drill is removed and a pin, precisely the right length and thickness, is forced into the hole, the canula is removed, the slight wound dressed, the limb fixed in a plaster cast that can be opened for inspection and massage. The pins are supposed to be permanently placed. To avoid misplacements the canula is held firmly against the bone at the proper angle, while the holes are bored, and the pins pushed home. Meanwhile two fluoroscopic pictures, taken at right angles, show every step of the buried work as though it were viewed through an open window.

Do You Seek Truth?

Brothers in Esculapias, do you wish to know the truth about the medical compounds you are urged by their manufacturers to prescribe? Do you desire to be informed as to whether substances claimed to enter into them, or their published proportions, are really there?

Do you consider it necessary that the therapeutic results so widely advertised are actually forthcoming, or even if so, are they desirable?

If such be the case, where can you secure the information called for?

Certainly not by reading the advertising pages of medical journals, that, in spite of undeniable proof of their fraudulent or unethical or harmful character, continue to publish the showy advertisements of any proprietary medicines that will pay the price. Nor yet by reading the "notices" or comments printed among the pages devoted to literature, for almost always they are written by the advertisers themselves and sent to the editors, who have them printed unchanged.

Not even to their editorial columns can you look for enlightenment, for the publishers and owners know that, as M. J. Breitenbach Company write to the A. M. A. Journal, "The Breitenbach Company stated that it could not see any advantage in advertising in a journal that would editorially contradict the statements that appeared in its advertising pages." What the A. M. A. Journal here said referred entirely to the report of a scientific commission. It did not mention the Breitenbach Company. It said: "The day of blind reliance on iron, quinine and tonics in general in the treatment of anemic conditions in tropical countries is past never to return." But that was enough to cause the loss, though unregretted, of an advertisement.

Where, then, may truth be found? The

answer is easy. Read such medical journals as publish no advertisements of proprietary medicines until they have been properly investigated and are approved by competent authority. It is not necessary for every journal to employ a board of expert chemists to make the investigations. Nearly all their editors are members of the American Medical Association, which assumes that task for our common benefit. It is *our* institution, doing the work thoroughly and well, and we are not following the lead of any outsider when we acccept their reports for our guides. You may safely accept as reliable the statements of every advertiser admitted to the pages of this *Journal,* for they have been investigated and found trustworthy. Few are the medical monthlies that have taken this bold stand. When you realize this fact, and see the splendid character and prominence of our contributors, you surely must feel like congratulating yourself on having some source wherein to seek both knowledge and the truth. When you wish to know whether or not a proprietary article is truthfully advertised, look for its advertisement in the *Southern Medical Journal.* If you find it there you *know* it is an honest statement. If it is not there, *perhaps* it is reliable, perhaps not. If you desire to know the truth about any proprietary or other pharmaceutical remedy that you may have seen advertised, we will be pleased to have you write to the *Journal,* and we will, if possible, give the exact information regarding its chemical composition, physiological effects and indications for use in the various diseases.

Pellagra in Italy Not as in America

A perusal of Public Health Report of the P. H. and M. H. Service No. 65, compiled by that industrious and accurate observer, Dr. C. H. Lavinder, reveals some interesting points of difference in the prevalence and character of pellagra as seen on the one hand, in northern Italy, and, on the other, in the southeastern part of the United States.

Lavinder found, on personal investigation, that in Italy most of the cases would seem to come from some restricted localities, while surrounding areas would be apparently immune. Several authorities have mentioned this "patchy" distribution of the disease. Moreover, in that country pellagra is largely rural, and seldom urban in location. The poorer peasant and laboring classes show most cases, country surroundings seeming to favor it. In the United States "the small mill towns and villages of the Southern States suffer worst from the disease," yet cases are constantly met with in well-to-do families, even as far north as the borders of Kentucky. Statistics, however, are not yet available.

Age seems to affect the severity of the disease in Italy, where, according to Neusser, children show a certain tolerance by presenting only a mild erythema. On the contrary, the cases at the orphan asylum in Tennessee proved to be obstinate, and, to a great extent, fatal. Such, in this country, is not infrequently the case. If any difference in susceptibility exists on account of sex, females suffer most. This seems to be especially true of negro women in the South. Nationality is indifferent.

Among occupations those who till the soil seem to suffer most frequently. The contagiousness of pellagra is strenuously denied by most observers.

In the pellagrosario, or hospital for pellagrins, near Venice, in Italy, where for many years hundreds have always been under treatment, and where sixty or seventy nurses and employes care for them, "no attendant or nurse has ever been known to develop the disease." Lavinder goes on to say: "Such observations could be multiplied." Large families care for one pellagrin member for years and the rest escape. Yet in some way it slowly extends an infected area and becomes endemic. It also suddenly makes its appearance in places previously free from it. The point which pellagra chiefly affects is the central nervous system. Patients appar-

ently recovered from the disease are liable to recrudescence, even after one or more years. One attack predisposes to another instead of establishing an immunity. Whether there is any causal element in maize or not, it has been established that patients who have never eaten maize have had pellagra. It is encouraging to note that though the disease was once endemic and widely prevalent in France, it has practically disappeared from that country. Oh, for a new Pasteur to track down the cause of such a beneficent effect, for a cause "there must be."

"Anesthesology"

In the A. M. A. Journal, of Dec. 2, 1911, Dr. Arthur Dean Bevan, of Chicago, reports the concusions drawn from a study, during a period of eight years, of various anesthetics and their effects, conducted at the Presbyterian Hospital and Rush Medical College, and combined with extensive study of the literature, in order to be able to make an intelligent choice of an anesthetic. Several of his conclusions are interesting as well as novel. For instance, he finds that after ether anesthesia the power of phagocytosis, upon which depends the destruction of numerous pathogenic bacilli, is reduced for a variable period of time, but that "small amounts of lecithin given subcutaneously counteract the inhibitory effects of the ether." Olive oil internally administered tends to have the same restorative effect in some degree.

He finds that anesthesia from nitrous oxid gas causes "no permanent effects of any significance; that ether causes more harmful effects, and that chloroform causes the most harmful results."

Concerning spinal anesthesia, he says, after some discussion of its shortcomings and dangeds: "From what I know of the evidence of spinal anesthesia, and from what I know of the anatomy of the spinal cord, I would under no circumstances which I can now conceive of choose spinal anesthesia for my own case if I required a surgical operation."

Concerning the use of scopolanim and morphine he quotes the protest of his anesthetist, Dr. Herb, after an experience of 15,000 cases. She says: "In selected cases it may be of value, but the use of morphine with atropin or hyoscin (Scopolanim) is absolutely detrimental in many instances." Finally for routine work he condemns chloroform and recommends ether.

He considers nitrous oxide as generally suitable for brief anesthesias only, though he is inclined to recommend it when the kidneys are diseased. "It should not be employed in patients with bad hearts. It should not be employed in preference to ether in patients who are good surgical risks."

Local anesthesia has "a limited field of usefulness," and if cocaine is used one-fourth grain is the largest dose he recommends, one-tenth being safer. It should be given in normal salt solution with a little epinephrin. If not more than one-tenth grain is given it "may safely be preceded by a small dose of morphine and scopolamin.

"Spinal cord anesthesia has, today, no place in surgery."

He believes the administration of surgical anesthesia demands a trained anesthetist.

The article, though presenting little that has not previously been advanced, adds strong support to the prevailing theories and practice of anesthesia in this country today.

THERAPEUTICS

CATHARTICS AND LAXATIVES.

This subject has been mentioned briefly in former numbers of the JOURNAL, but its great importance to the practicing physician warrants both elaboration and repetition. The subject will therefore be considered at some length. The renewed interest in therapeutics everywhere is a thing for which the JOURNAL has long labored, and the subject here considered needs more careful attention than it gnerally receives.

The physician who knows how to select his cathartics or laxatives for each case, how to combine them, and at what time and in what shape to administer them, has masterd one of the broadest and most important studies in therapeutics.

The difference between a laxative and a cathartic is partly of dosage and degree of effect, and partly intrinsic in the drugs themselves.

Two modes of action are credited to them, one the increase of rapidity in the peristaltic wave that sweeps from the stomach to the rectum, urging the intestinal contents along by the mouths of glands and absorbents towards the final point of escape. The other by increasing the secretion of the fluids naturally found in the intestinal tract, and thus facilitating the passage of its contents. Probably both these effects are produced by such drugs, some inclining more in one direction, some in the other. Moreover, the mechanism involved in these actions is not the same in all cases. It is known that purgation can be caused by the hypodermatic injection of certain substances, indicating that some influence over the nervous centers controlling peristalsis was aroused. Others cause a local irritation to the mucous membranes of the intestines resulting, doubtless, through a reflex action, in increase of both secretion and motion. Again, some drugs stimulate secretion in one part of the tract while others select an entirely different locality for their action. Finally, some drugs, entirely destitute of any laxative properties when given in minute doses by themselves, will cause an appreciable increase in that of other drugs, although the same minute amount be all that is added to them. Taking into consideration all these circumstances, and the fact that this class of medicines is prescribed and used more universally than any other, and that their name is legion, it follows that the study of cathartics and laxatives must, unless concentrated within the closest practical limits, become burdensome and tedious.

Therefore we will confine our studies in this class of remedies to those of each character that have won and kept the confidence of the profession at large, merely recording the names and doses of the many other drugs of similar qualities that have from time to time claimed usefulness. Those to be fully studied will be selected in the order of their popularity as shown by frequency of use.

Hydrargyri Chloridum Mite.—The mild chloride of mercury, calomel, is without doubt more frequently prescribed, either by itself or in combination, for laxative purposes than any other drug. Its uses have been so fully considered under the head of alteratives that it would be repetition to study it again. Its great importance as an antiseptic, a mild laxative, a stimulant to hepatic and glandular function renders it excedingly valuable, to say nothing of its tastelessness, its acceptability to the most delicate stomachs, and its peculiar adaptability in minute doses to so many conditions of childhood.

Podophyllin.—As an adjunct to calomel in stimulating the secretion of bile, podophyllin is a frequent addition to laxative and purgative prescriptions. It is a resin of the may-apple plant, podophyllum, composed of two glucosides, podophyllotoxin and picropodophyllin. It is a greenish yellow powder and contains all the valuable elements of the plant. Podophyllin is very slow in its action, generally requiring from twelve to twenty-four hours to take effect. It acts upon the liver, increasing

the flow of bile and adding the color of that substance to the ashy stools of torpid liver. It is very useful in cancer of the liver and cirrhosis. Unfortunately its action is accompanied by much griping, and this should always be guarded against by the addition of hyoscyamus or belladonna to prescriptions containing it. In malarial cases a common form of combination is as follows:

R. Hydrargyri Chloridi Mitis.....
.....grains VI (0.38 gm).
Podophylli Resinae .....
.....grains III (0.19 gm).
Pulvis Extracti Belladonnae.....
.....grains I (0.06 gm).
Quininae Sulphatis .....
.....grains XII (0.77 gm).
Misce. Fiat capsulae No. XII.

Signa: One every four hours till effectual.

Both the quinine and the belladonna will aid the other drugs in their effectiveness. The doses of podophyllin sometimes advised in text-books, especially those issued several years ago, are too large. Serious conditions have been caused by the administration of one grain. From 1-10 to 1-2 should be the range.

Podophyllotoxin is recommended by many physicians as a substitute for the resin. It is said to be equally certain in its stimulation of the liver and intestinal tract, but free from griping and nauseous effects.

The dose is from 1-16 to 1-10 of a grain (0.004—0.006 gm). Podophyllin was considered by Trousseau the most reliable remedy for chronic constipation. He used it in minute doses, 1-20 to 1-10 grain, three times a day.

BOOK REVIEWS.

BRIGHT'S DISEASE.

The Anatomic Histological Processes of Bright's Disease. By Horst Oertel, M.D., Director of the Russell Sage Institute of Pathology, New York. Octavo of 227 pages, with 44 illustrations and 6 lithographic plates. Philadelphia and London: W. B. Saunders Company, 1911. Cloth, $5.00 net.

This remarkable work is constructed upon the stenographer's notes of five lectures, delivered at the request of the Resident Staff of the New York City Hospital during the winter semester, 1908 to 1909, in the Russell Sage Institute of Pathology.

The modest title gives no hint of the fine character of the book. The type is large and clear, and the paper a heavy plate of the finest description. The illustrations are works of art and give the true "anatomical idea" of the structure of the kidneys in their various elements, in health and in disease. Probably no one but the author is capable of presenting pathological conditions of the kidney as seen in Bright's Disease in such a clear, perspicuous and forceful manner as is seen in this book. It is the opinion of the reviewer that no physician will ever regret the investment that adds this splendid work to his working library.

STUDIES IN CARDIAC PATHOLOGY.

By George W. Norris, M.D., Associate in Medicine at the University of Pennsylvania. Large Octavo of 233 pages with 85 original illustrations. Philadelphia and London: W. B. Saunders Company, 1911. Cloth, $5.00 net.

This book is a successful effort to supply to the seeking eye the mechanical structure of the heart in various diseased conditions, to act as a substitute for the actual, tangible organ, as it would appear when removed from the body and, perhaps, hardened by formaldehyde saturation. The illustrations are life-size photographs, printed on heavy plate paper in the highest style of the art, and there is enough text, admirably printed, to fully explain their meaning. It is as though a demonstrator, holding up the prepared organ, were to say: You may here see the results of the pathological processes I have just described, and can estimate their effect, etc., etc., according to the example selected. To one who is fond of studying cardiac diseases the book is simply fascinating.

VAGINAL CELIOTOMY.

By S. Wyllis Bandler, M.D., Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital. Octavo of 450 pages, with 148 illustrations. Cloth, $5.00 net; Half Morocco, $6.50 net. W. B. Saunders Company, Philadelphia and London, 1911.

This is another one of the de luxe editions of remarkable books recently published by this eminent firm. Not only the plates but the text also are printed on what the reviewer takes to be the finest of cameo paper. The result is a work that even were the subject uninteresting and the treatment mediocre would still be a valuable production; but when, as in this instance, the theme is of highest interest and the author a master of both scalpel and pen the book becomes a treasure.

The splendid photo-engravings portray the oper-

ation under consideration, step by step so vividly that the reader has the sensation of having witnessed it from beginning to end. Such monographs in a doctor's library add immensely to its value from every point of view. They also refresh his memory along practical and useful lines, and if, unfortunately he be without experience in the particular operations described a careful study of the text and illustrations will go far towards remedying that defect. The fact that there is demand for such elegant books on medical and surgical subjects speaks well for the profession. It is to be hoped that that demand will be sufficient to warrant these enterprising publishers in making many more of equal beauty and value.

ORTHOPEDIC SURGERY.

By Edward H. Bradford, M.D., Surgeon to the Boston Children's Hospital; Professor of Orthopedic Surgery, Harvard Medical School; and Robert W. Lovett, M.D., Associate Surgeon to the Boston Children's Hospital; Assistant Professor of Orthopedic Surgery, Harvard Medical School. Three hundred and sixty-four figures and illustrations, with 410 octavo pages. William Wood and Company, New York. Price, $3.50 net.

The increasing interest in the surgical treatment of the class of cases which are grouped under the term orthopedic surgery has given rise to a demand for a condensed handbook for the use of students and practitioners embodying a brief statement of the generally accepted opinion as to the nature and treatment of the afflictions under consideration. Special emphasis is placed upon the treatment for such conditions, which has been used successfully in the Boston Children's Hospital for the past thirty years. It is a most excellent work.

THE A. T. STILL RESEARCH INSTITUTE.

Printed by Montfort & Co., Cincinnati, Ohio.

A neat brochure bearing this title has reached the reviewer's table. Examination shows it to be a work prosecuted under the auspices of the "Osteopaths" and the investigators seem to be attacking their problems in a proper manner.

Experimentation on animals, governed by controls, is the line followed. If the experiments are carefully and conscientiously performed, and their results similarly reported, no one can condemn such an effort.

The right can never be harmed by a truth.

PRIMER OF HYGIENE.

By John W. Ritchie, Professor of Biology, College of William and Mary, Virginia, and Joseph S. Caldwell, Professor of Biology, Peabody College for Teachers, Tennessee. Illustrated by Karl Hassmann and Hermann Heyer. It is claimed that this is the only schoolbook of its kind. Published by the World Book Company, Yonkers-on-Hudson, New York.

There can be no doubt that the only route to success in the effort to educate the public to the importance of proper hygiene and sanitation lies through the public schools. Grown men and women are too busy fighting for a living to take time to learn the details necessary to the preservation of the health of the people, but to school children it will be all in the day's work, and the knowedge then absorbed will be utilized in later years. The book under consideration is a long step in the right direction, and should be adopted by every school board in the land. It contains few propositions that medical men cannot accept, and they should use their influence to secure its adoption.

SPIROCHAETES.

A Review of Recent Work with Some Original Observations. By W. Cecil Bosanquet, M.A., M.D. Illustrated. Published by the W. B. Saunders Company, Philadelphia and London.

The interest aroused concerning the spirochaetae by the discovery of S. pallida and its general acceptance as the etiological factor in syphilis, led to a widespread desire to read all that was known upon the subject. The result was that though considerable literature was extant yet it was so scattered and disconnected that satisfactory study was difficult. On this account our author undertook to assemble the various writings upon the subject into one small volume, and to add thereto some results of his own observations. This he has done in a volume of 150 pages, well illustrated. The reviewer knows of no other source whence so much convincing information concerning spirochaetae may be obtained, and the illustrations are truly illuminating to the understanding. The typographical work throughout is artistic. A large sale of the work is merited and predicted. Price, $2.50 net.

GONORRHEA IN THE MALE.

A Practical Guide to Its Treatment. By Abr. L. Wolbarst, M.D., Consulting Genito-Urinary Surgeon Central Islip State Hospital; and of others; Professor of Genito-urinary Diseases, New York School of Clinical Medicine, etc. Published by The International Journal of Surgery Company, New York.

This is a most excellent little book of 175 pages, well illustrated. It brings the subject up to date, particularly in the remarkable advance recently witnessed in genito-urinary instrumentation. In this regard the instructions and illustrations are simply invaluable. No matter how large may be the library of any specialist in this department of medicine he can still find use and need for this modest little book.

CLINICAL SYMTOMATOLOGY.

With Special Reference to Life-Threatening Symptoms and Their Treatment. By Alois Pick and Adolph Hecht, Vienna. Authorized translation under the editorial supervision of Karl Konrad Koessler, M.D., Vienna. Published by D. Appleton & Company, New York and London. Pages 833. Price, cloth, $6.00; leather, $7.00.

This is a great book. The 77 pages of the first chapter are devoted to "Anomalies" of the skin, of nutrition and development, and of temperature. Succeeding chapters deal with disturbances, disorders, or diseases of all the organs, of their functions or secretions, of pain, consciousness, sleep, vertigo, etc.

It would be useless to try to give an idea of the scope of this great work in the limited space available. No physician should consider his library complete without a copy. This phrase, though hackneyed, is written in all sincerity.

A TEXT BOOK OF ALKALOIDAL THERAPEUTICS.

Being a condensed resume of all available literature on the subject of the Active Principles added to the Personal Experience of the Authors. By W. F. Waugh, M.D., and W. C. Abbott, M.D., Chicago. The Abbott Press. Third edition.

This is a book of 762 pages, fairly well constructed and full of valuable information. Without doubt many drugs of vegetable origin now used as extracts or tinctures can be adequately represented by their "active principles," just as are conchona or coca, so soon as those active principles have been indubitably segregated and declared official. This book is a creditable effort to supply physicians with a working knowledge of those alkaloids and glucosides. Some of them herein discussed have not yet been universally accepted by pharmacologists as fully representing the properties of the plants from which they are extracted. Others have for a long time been the subject of debate. Such is cactin. In this book the whole discussion of cactin is freely presented, and the very conservative conclusion reached is expressed as follows: "But if we admit with the Standard Dictionary that a tonic is a remedy that gradually restores the normal tonic of organs from a condition of debility * * * we are justified in calling cactin a heart tonic. In the judgment of the reviewer this book is a valuable supplement to all the standard works on materia medica and therapeutics. An unfavorable criticism possibly is that it tends to advertise the goods of one firm. The thought that one of the authors manufactures and sells the drugs described should lessen the authority of the text.

PUBLIC HYGIENE.

By Thomas S. Blair, M.D., assisted by numerous Contributors. In two volumes.

This exhaustive work appears to cover the whole subject of public hygiene from every point of view. Articles are contributed by men of prominence in many callings—teachers, hospital officials, college professors, pharmacists, military men, railroad superintendents, manufacturers of foodstuffs, and leading officials of town, county and state boards of health. Authorities more worthy of attention, more widely distributed or more numerous are seldom united in the production of a book, and the result is a work that will stand for years as the leading exponent of the work required of public health officials for the protection of the physical welfare of the citizenship, and the enforcement of sanitation. the citizenship, and the enforcement of sanitation.

The book is finely and profusely illustrated, and is worthy of a place in every library, whether that of laymen or physician.

Published by Richard G. Badger. The Gorham Press, Boston.

THE PARASITIC AMOEBAE OF MAN.

By Charles T. Craig, M.D. Captain Medical Corps, United States Army. From the Bacteriological Laboratory of the Army Medical School, Washington, D. C., and the Rockefeller Institute for Medical Research, New York City. Published with the authority of the Surgeon General of the United States Army. Price, cloth, $2.50 net. T. B. Lippincott Company, Philadelphia and London.

"The first investigation to observe amoebae was Lambl, of Prague, who in 1860 described organisms occurring in the feces of a child, which he interpreted as amoebae, but he attached no great importance to their presence, although the child was suffering from a severe diarrhoea at the time."

The above quotation is the second paragraph in the book and illustrates the clear, easy style in which the whole is written. The paper, type and presswork are admirable; there is no dazzling gloss, and the letters are large and heavy. The book gives us one of the most clear and complete presentations of the entire subject from every point of view known to the reviewer, bringing the record down to publication, dated 1909. There are many illustrations of these amorphous organisms, and they are well executed.

The *Entamoeba Hystolica* is particularly well demonstrated, showing "differentiation between ecto- and endoplasm, vacuoles and red blood corpuscles." Some of them are shown" filled with red blood corpuscles." In addition to E. Histolyca the illustrations show E. Coli and E. Tetragena, and with the lucid text enables the microscopist to readily differentiate them.

Craig is so well and widely known as an investigator and writer that no higher praise can be spoken of the book than to say, "It is worthy of him;" and it is.

DISEASES OF THE STOMACH, WITH SPECIAL REFERENCE TO TREATMENT.

By Charles D. Aaron, Sc.D., M.D. Professor of Gastroenterology and Adjunct Professor of Dietetics in the Detroit College of Medicine; Professor of Diseases of the Stomach and Intestines in the Detroit Post-Graduate School of Medicine, etc. Octavo, 555 pages, with 42 illustrations and 21 plates. Cloth, $4.75 net. Lea & Febiger, Philadelphia and New Fork; 1911.

This book is, as its title indicates, strictly practical and devoted chiefly to the medical side of the subject, Etiology, symptomatology, pathology and diagnosis are introduced only in so far as they are necessary to an understanding of the methods of treatment proposed. On account of recent discoveries in the physiology of digestion, a chapter has been devoted to this subject, but from the viewpoint of the practising physician rather than from that of the physiologist.

Very valuable points are given in the chapter on Examination of the Stomach Contents, a diagnostic measure whose importance is realized more and more every day. The author does not seem to approve very much of the so-called "indirect methods" of such examinations, but speaks hopefully of the Elsberg, Neuhof and Geist plan of proving the presence of cancer by allowing its hemolysius to react upon washed human blood corpuscles from a healthy person. In treating hyperasidity he prefers magnesium carbonate, or calcined, to soda preparations on account of their freedom from paseous releases. Of the bismuth preparations he much prefers the subnitrate, though he recommends the salicylate as an excellent antiferment. Space does not permit further analysis. The whole book of nearly 600 pages, well illustrated, is worthy of careful study.

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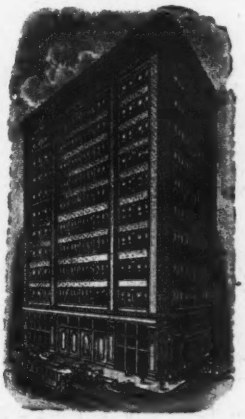

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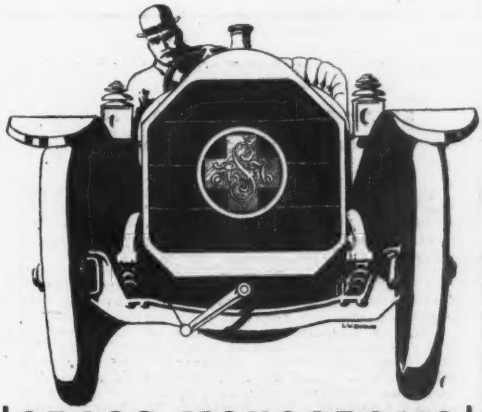

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Index to Advertisements, February, 1912

SANATORIUMS, HOSPITALS, ETC.

Alabama Medical Department, University.....XI
Beechurst Sanitarium II
Board's Sanatorium VI
Broughton's Infirmary VIII
Cincinnati Sanitarium VI
City View Sanitarium.....Inside front cover
Davis Infirmary I
Grandview Sanitarium III
Gulf Coast Health Resort.....VII
Howell Park Sanatorium.....X
Inge-Bondurant Sanatorium V
Lake Geneva Sanatorium.....I
Lynnhurst IV
Medico-Chirurgical College VII
Moody's Sanitarium IV
New York Post Graduate.....VIII
Oconomowoc Health Resort.....V
Oxford Retreat III
Pettey & Wallace Sanitarium.....VIII
Pope Sanatorium.....Inside front cover
Pottenger Sanitarium III
River Crest Sanitarium.....V
St. Luke's Hospital.....II
South Highland Infirmary.....X
Southern Infirmary VII
Sunmount Sanatorium VII
Sunnyrest Sanatorium.....Inside front cover

PUBLICATIONS.

Index to Advertisements.....XXII
Journal Advertisement XX
J. A. Majors, Books.....XII
Medical Protective Co.....XXI
Mobile & Ohio R. R.....XIII
Mosby, C. V., Books.....XII
Photo-Micrographs XIII
Saunders' Books IX
Saunders' Books.....Outside front cover
Webster's New Dictionary.....XX

INSTRUMENTS, APPARATUS, ETC.

Allison, W. D. Co., Furniture.....XXI
Cresco Products, Farwell & Rhines.....XXI
Hickok Mfg. Co.....XXI
Leitz New Microscopes.....XVI
McDermott Surgical Inst. Co.....XVI
Perfection Storm Co.....Inside back cover
Reynolds' Music House.....XX
Standard Typewriter Co.....XVII
Storm Binder .....Inside back cover
Weissfeld Bros., Coats.....XXI

DRUGS, DRUGGISTS AND PREPARATIONS.

G. W. Carnrick Co.....XIV
Digalen (Hoffmann-LaRoche) XV
Ergot (Pitman-Myers Co.).....Inside back cover
Kelene (Merck & Co.).....XVII
Mulford, H. K. Co.....XVIII
Parke, Davis & Co.....Outside back cover
Regulin (Reinschild Chem. Co.).....XXI
Supracapsulin (Cudahy) XV
Van Antwerps', Drugs.....XIX
Welch's Grape Juice XXII

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